

# TA-F333ESL/F770ES/F870ES

## SERVICE MANUAL



Photo: TA-F333ESL

*AEP Model*  
*UK Model*  
 TA-F770ES  
*E Model*  
 TA-F333ESL  
*Germany Model*  
 TA-F770ES/F870ES

### SPECIFICATIONS

#### Amplifier Section

Items	Condition		Data	
			TA-F870ES	TA-F333ESL/TA-F770ES
Continuous RMS power output (both channels driven simultaneously)	4 ohms, 20 Hz – 20 kHz	Countries other than North European Countries	170 W + 170 W (THD 0.02%) (DIN: 200 W + 200 W)	140 W + 140 W (THD 0.02%) (DIN: 180 W + 180 W)
	6 ohms, 20 Hz – 20 kHz	North European countries	—	110 W + 110 W (THD 0.018%) (DIN: 130 W + 130 W)
	8 ohms, 20 Hz – 20 kHz	Countries other than North European countries	120 W + 120 W (THD 0.004%) (DIN: 135 W + 135 W)	100 W + 100 W (THD 0.015%) (DIN: 120 W + 120 W)
		North European countries	—	90 W + 90 W (THD 0.015%) (DIN: 105 W + 105 W)
Power band width (IHF)	8 ohms, THD 0.02%		10 Hz – 100 kHz at 45 W	10 Hz – 100 kHz at 45 W
Dynamic headroom ('78 IHF)	4 ohms		2 dB	2 dB
	8 ohms		1.2 dB	1.2 dB
Total harmonic distortion	8 ohms, at 10 watt output		0.003%	0.003%
Intermodulation (IM) distortion 60 Hz: 7 kHz = 4 : 1	4 ohms, at rated output		0.008%	0.008%
	6 ohms, at rated output		0.006%	0.006%
	8 ohms, at rated output		0.004%	0.004%
Damping factor	8 ohms, at 1 kHz		100	100
Residual noise	network A, 8 ohms		less than 110 $\mu$ V	less than 110 $\mu$ V

— Continued on next page —

INTEGRATED STEREO AMPLIFIER  
**SONY®**

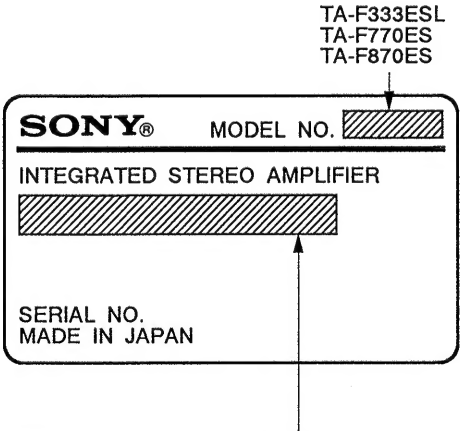
Items	Condition		Data	
			TA-F870ES	TA-F333ESL/TA-F770ES
Frequency response	PHONO MM		RIAA equalization curve ± 0.2 dB	RIAA equalization curve ± 0.2 dB
	TUNER, CD, TAPE 1, 2, 3, DIRECT IN		2 Hz – 200 kHz ± <sub>3</sub> dB	2 Hz – 200 kHz ± <sub>3</sub> dB
Input sensitivity	PHONO	MC	0.17 mV (1 kohm) 0.17 mV (100 ohms)	0.17 mV (1 kohm) 0.17 mV (100 ohms)
		MM	2.5 mV, 50 kohms	2.5 mV, 50 kohms
	TUNER, CD, DIRECT IN, TAPE 1, 2, 3, ADAPTOR, AUX		150 mV, 20 kohms	150 mV, 20 kohms
S/N (network) (78 IHF)	PHONO	MC	79 (0.5 mV)	77 (0.17 mV)
		MM	93 (5 mV)	93 (2.5 mV)
	TUNER, CD, DIRECT IN, TAPE 1, 2, 3, ADAPTOR, AUX		105 (150 mV)	105 (150 mV)
Output voltage impedance	REC OUT 1, 2, 3 ADAPTOR		150mV, 1kohm	150mV, 1kohm
	HEADPHONES		25 miliwatts (at 8 ohms) Accepts low and high impedance headphones.	25 miliwatts (at 8 ohms) Accepts low impedance headphones.
Tone controls	BASS, at 100 Hz		± 7 dB	± 7 dB
	TREBLE, at 10 kHz		± 6 dB	± 6 dB
Subsonic filter	—		6 DB/octave attenuation below 15 Hz	6 DB/octave attenuation below 15 Hz
Muting	—		– 20 dB	– 20 dB

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MODEL IDENTIFICATION  
– Specification Labels –



AEP, Germany model: AC: 220 V ~50/60 Hz  
 UK model: AC: 240 V ~50/60 Hz  
 E model: AC: 120/220/240 V ~50/60 Hz

**SAFETY-RELATED COMPONENT WARNING!!**  
 COMPONENTS IDENTIFIED BY MARK OR DOTTED LINE WITH MARK ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

## General

**System** Preamplifier section: Low-noise high gain NFB type equalizer amplifier, passive type direct tone control  
Power amplifier section: Pure-complementary SEPP power amplifier, MOS FET power transistor for final stage.

**Power requirements**  
UK model: 240 v AC, 50 Hz  
AEP, Germany model: 220 – 230 V AC, 50/60 Hz  
E model: 120 V, 220 V, or 240 V AC, adjustable, 50/60 Hz

## Power consumption

	TA-F870ES	TA-F333ESL TA-F770ES
UK model	—	760 W
Germany model	390 W	330W
North European model	—	260 W
European model	—	330 W
E model	—	330 W

## AC outlet

	TA-F870ES	TA-F770ES
UK model	—	1 switched, 100 W max.
Germany model	1 switched 100 W max.	1 switched 100 W max.
AEP model	—	1 switched 100 W max.

## Dimensions

TA-F333ESL/TA-F770ES (AEP, E, Germany model):  
Approx. 470 × 165 × 435 mm (w/h/d)  
(18½ × 6½ × 17⅞ inches)

TA-F770ES (UK model):  
Approx. 430 × 165 × 435 mm (w/h/d)  
(17 × 6½ × 17⅞ inches)

TA-F870ES (Germany model):  
Approx. 470 × 165 × 435 mm (w/h/d)  
(18½ × 6½ × 17⅞ inches)

## Weight

TA-F333ESL/TA-F770ES (AEP, E, Germany model):  
Approx. 21.3 kg (47 lbs) net

TA-F870ES (U. K. model):  
Approx. 20 kg (44 lbs 2oz) net

TA-F870ES (Germany model)  
Approx. 24 kg (53 lbs) net

## Accessories supplied

Remote commander RM-S703 (1)  
Sony batteries SUM-3 (NS)  
Screws (8) (except for U. K. model)

Design and specifications subject to change without notice.

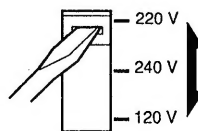
## Note

This appliance conforms with EEC directive 87/308/EEC regarding interference suppression.

# Operating Voltage

Before connecting the unit to an AC outlet, be sure that the operating voltage of your unit is identical with that of your local power supply.

UK model	Operates on 240 V AC, 50 Hz.
AEP, Germany model	Operates on 220 – 230 V AC, 50/60 Hz.
E model	Operates on either 120 V, 220 V, 240 V AC, adjustable, 50/60 Hz. The voltage selector is located on the rear panel. If you need to change the selector, disconnect the AC power cord and set the selector to the proper voltage of your local power supply.



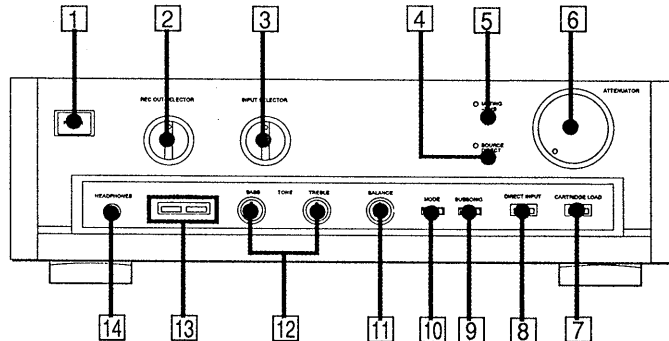
## SECTION 1

### GENERAL

This section is extracted from instruction manual.

## Function of Controls

### Front panel



#### 1 POWER switch and indicator

After the power is turned on, the standby indicator lights in red as the built-in muting circuit activates. When the amplifier stays in a stable operating condition, the indicator lights in green.

The indicator lights in red if the unit detects shorting of circuit of the speaker outputs or in case of short-circuit of the inputs of DC components. In such a case, disconnect the power source and check the connected components and speaker systems.

#### 2 REC OUT SELECTOR

Selects the program source sent to the REC OUT jacks for recording.

#### 3 INPUT SELECTOR

Selects the desired program source for listening.

#### 4 SOURCE DIRECT button and indicator

Depress the button. The red indicator lights and the circuits of the TONE control, SUBSONIC filter button, BALANCE control and MODE selector are disengaged without regard to the setting of the switches.

#### 5 MUTING button and indicator

Depress the button to reduce the sound level by 20 dB. (Output voltage becomes 1/10.)

Generally, keep the button released (OFF).

#### 6 ATTENUATOR

Adjusts the sound level. To increase the sound level, turn the control clockwise. To decrease the level, turn the control counterclockwise.

#### Note

Turn down the sound level before switching on the unit. This prevents damage to speakers.

#### 7 CARTRIDGE LOAD selector

Set the selector according to your cartridge.

MM: For moving-magnet type cartridge

MC: For moving-coil type cartridge

40  $\Omega$ : For a cartridge with an impedance of 40 ohms or more.

3  $\Omega$ : For a cartridge with an impedance of 3 ohms to 40 ohms.

#### 8 DIRECT INPUT selector

Set to SOURCE to select program source with the INPUT SELECTOR.

To listen to a program source processed through the equipment, such as graphic equalizer, connected to the ADAPTOR jacks, set it to ADAPTOR

To listen to a program source connected to DIRECT IN jacks, set it to DIRECT.

#### 9 SUBSONIC filter button

Depress the button to reduce noise components of less than 15 Hz, which cause modulation noise.

#### 10 MODE selector

STEREO: For listening to a stereo program.

MONO: For listening to a monaural program.

#### 11 BALANCE control

Adjusts the sound level of left and right speakers.

#### 12 BASS and TREBLE TONE controls

Adjust the tone quality.

To increase bass or treble sound, turn the control clockwise. To decrease them, turn the control counterclockwise.

#### 13 SPEAKERS buttons (TA-F222ESA/TA-F570ES/TA-F670ES)

Select speaker system A or B, or both.

To drive speaker system A: Depress A button.

To drive speaker system B: Depress B button.

To drive speaker system A and B: Depress A and B.

For headphones listening only: Set both to OFF ( $\square$ ).

#### TA-F670ES only

To use power amplifier or active speaker system connected to the PRE OUT jacks, depress B/PRE OUT.

#### SPEAKERS selector

Select speaker system A or B, or both.

To drive speaker system A: Set the selector to A.

To drive speaker system B: Set the selector to B.

To drive speaker system A and B: Set the selector A+B.

For headphones listening only: Set the selector to OFF.

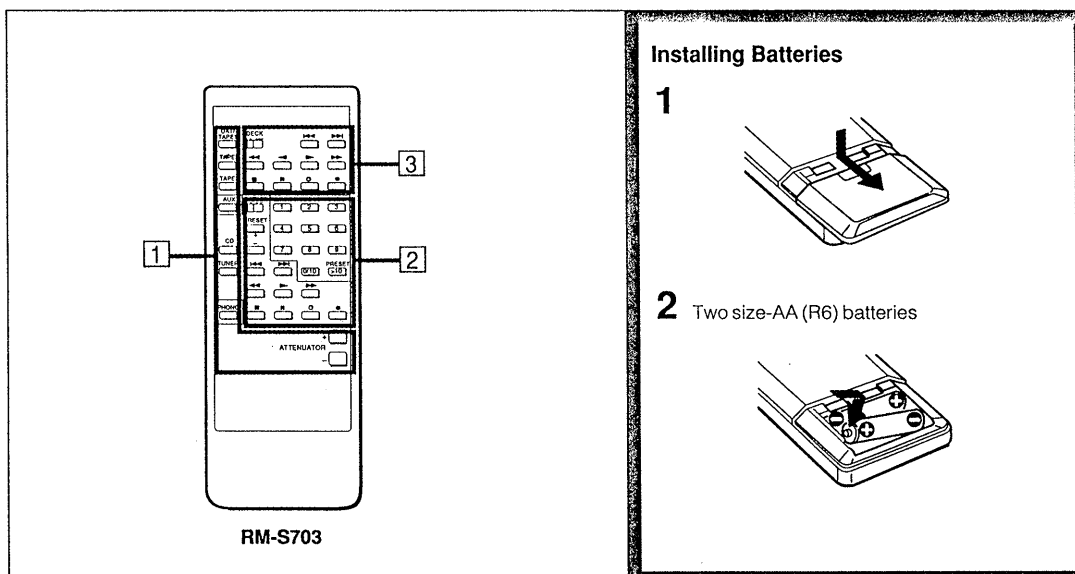
To use power amplifier or active speaker system connected to the PRE OUT jacks, set the selector to B/ PRE OUT.

#### 14 HEADPHONES jack

Accepts the stereo phone plug of headphones.

#### 15 Remote control sensor

## Remote Commander RM-S703



### Function of Controls

#### 1 Amplifier control section

Input selectors: Select an input source of the amplifier.  
ATTENUATOR +/- buttons: Control the volume of amplifier.

#### 2 Tuner/DAT deck/CD player control section

DAT/CD selector: Selects DAT deck or CD player.

◀◀/▶▶: Locates a desired selection.

◀/▶: Manual search

▶: Play

■: Stop

⏸: Pause

○: Record muting

●: Recording

PRESET +/- buttons: Selects a preset channel of the tuner. (only for the tuner)

Program number (1 to 0/10, and >10) and ENTER buttons: Select a preset station or track.

#### 3 Tape deck control section

DECK A/B selector: Selects deck A or B.

◀◀/▶▶: Locates a desired selection.

◀/▶: Play

◀◀/▶▶: Fast winding

■: Stop

⏸: Pause

○: Record muting

●: Recording

### Notes on Batteries

#### Battery life

About half a year of normal operation can be expected when using the Sony SUM-3 (NS) batteries. When the batteries are exhausted, the remote commander can no longer operate the unit. If this happens, replace both batteries with new ones.

#### To avoid battery leakage

When the commander is not used for a long time, remove the batteries to avoid damage caused by battery leakage and corrosion.

#### To avoid malfunction of the remote commander

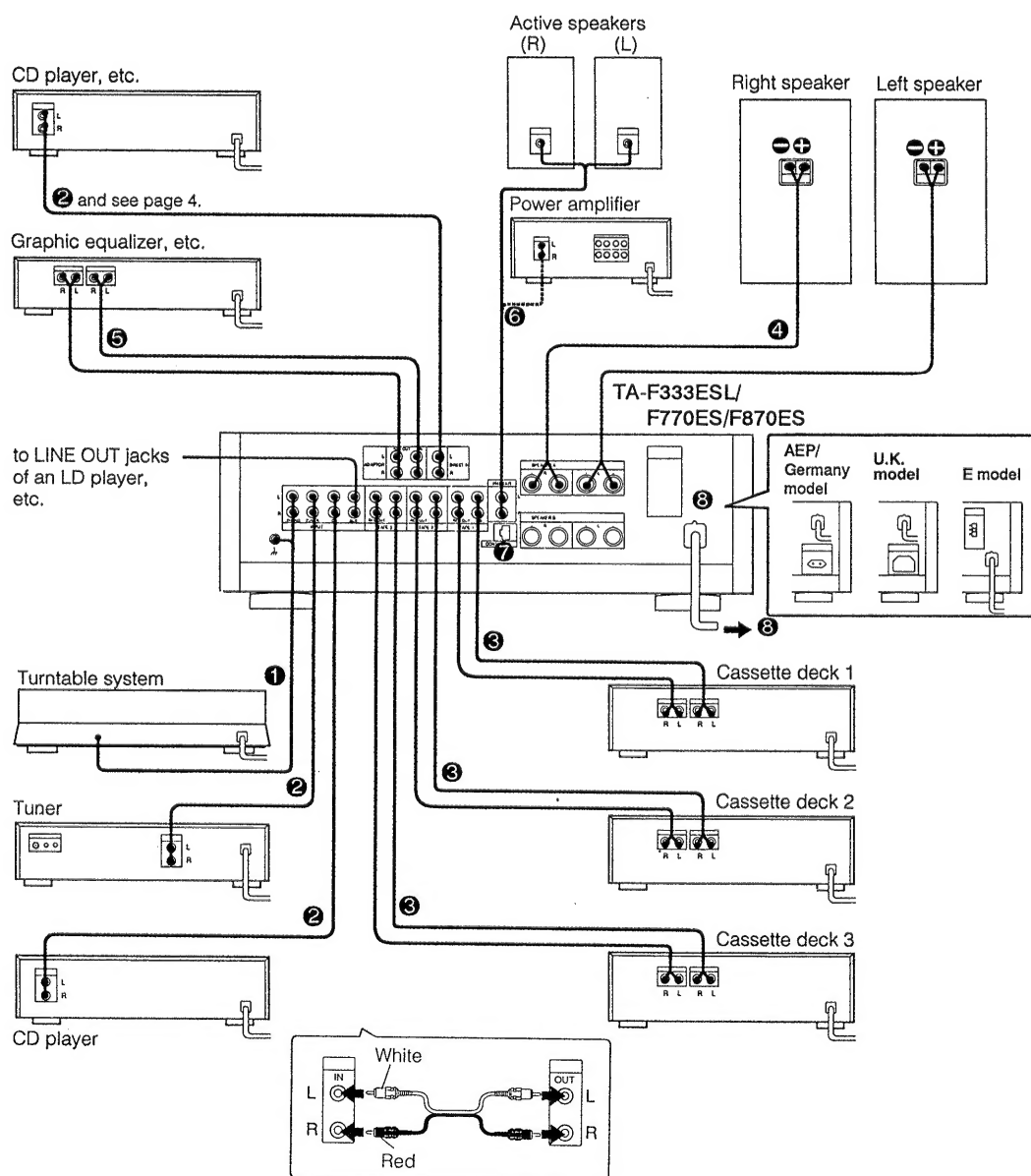
Avoid keeping the commander under extremely hot or humid locations.

## System Connections

### Connection Notes

- Connect the AC power cord last of all. Make sure that the power is off when making connections.
- Cord plugs and jacks are color coded. Red plugs and jacks are for right channel (R) and white ones for the left channel (L).
- Insert the cable connectors fully into the jacks. A loose connection may cause hum and noise.
- Connect the + and - cords of the speaker systems correctly to the + and - terminals of the amplifier respectively.

The numbers described ● correspond to the individual connecting diagram.



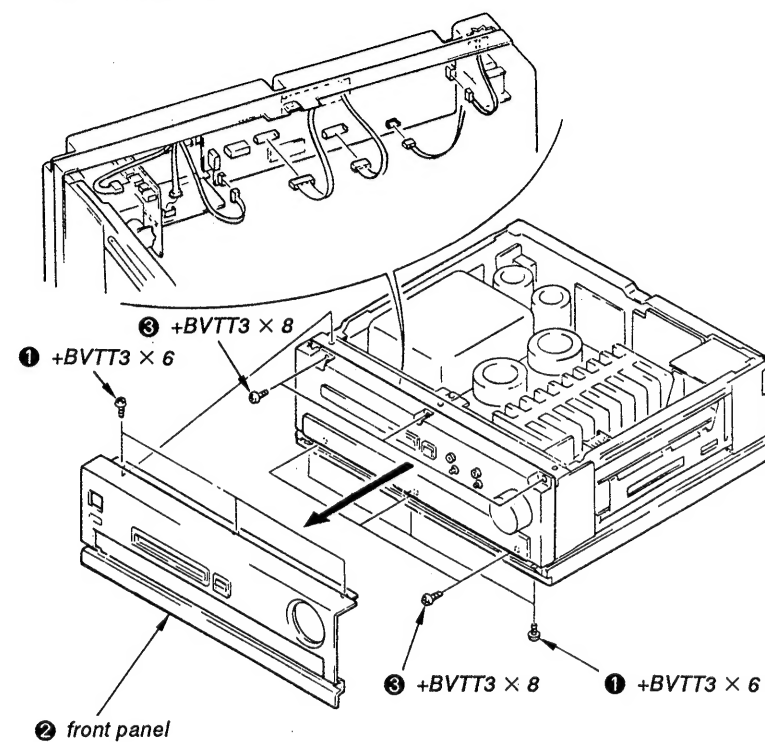
### To enjoy pure sound

Connect a CD player or a tuner to the DIRECT IN jacks. DIRECT IN circuitry bypasses the INPUT SELECTOR and REC OUT SELECTOR so the signal is sent directly to the amplifier. Note that the program source input through DIRECT IN jacks cannot be processed through an adaptor nor be output through REC OUT jacks.

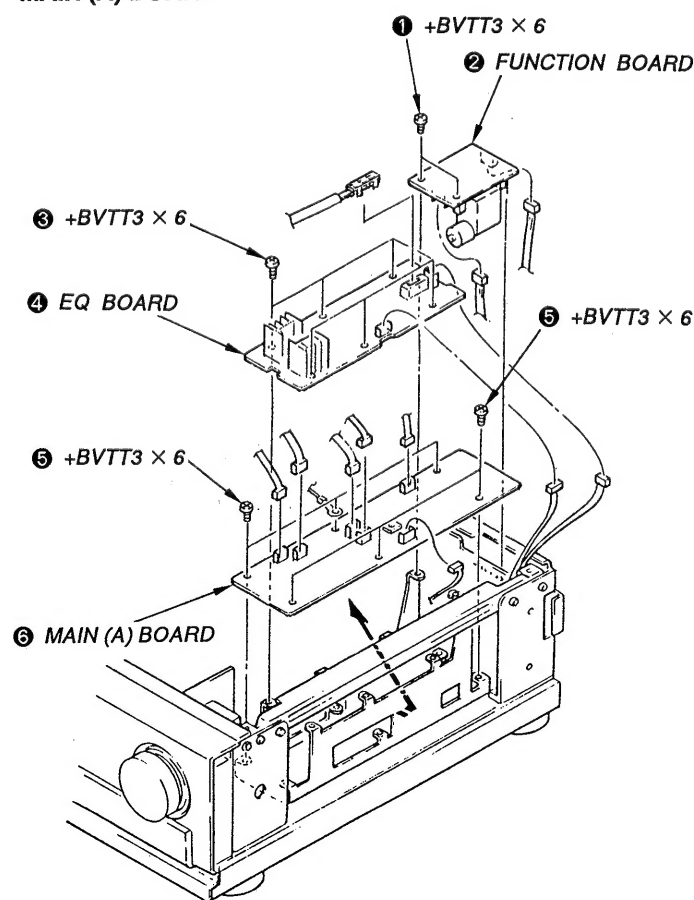
## SECTION 2 DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

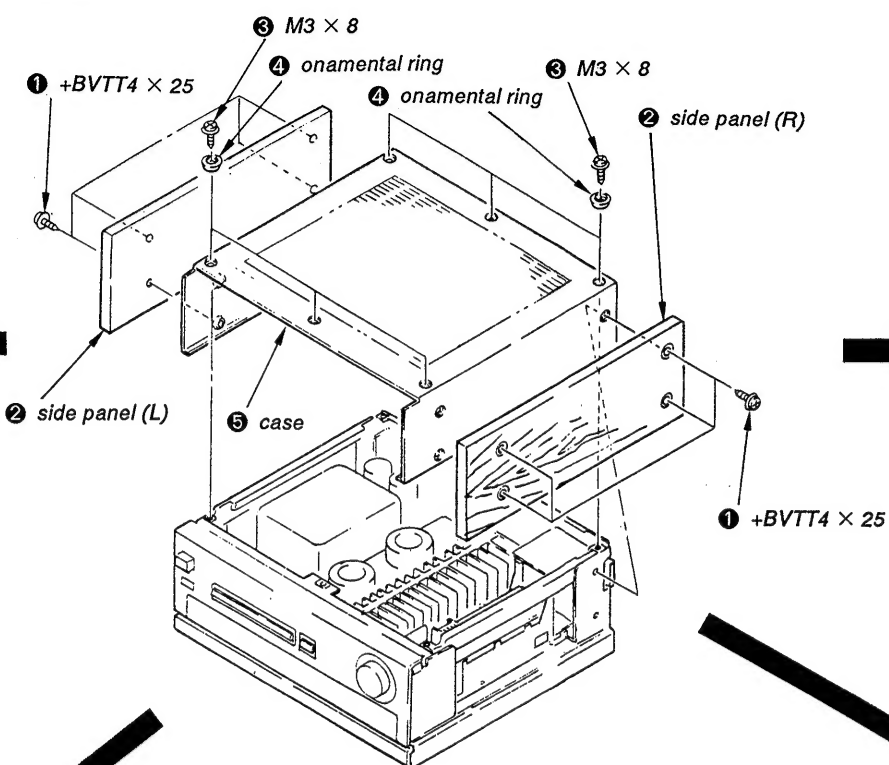
### FRONT PANEL



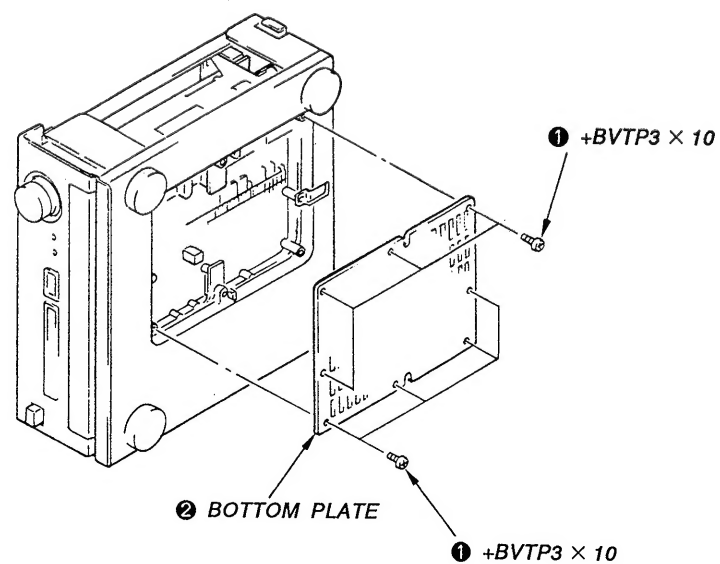
### MAIN (A) BOARD



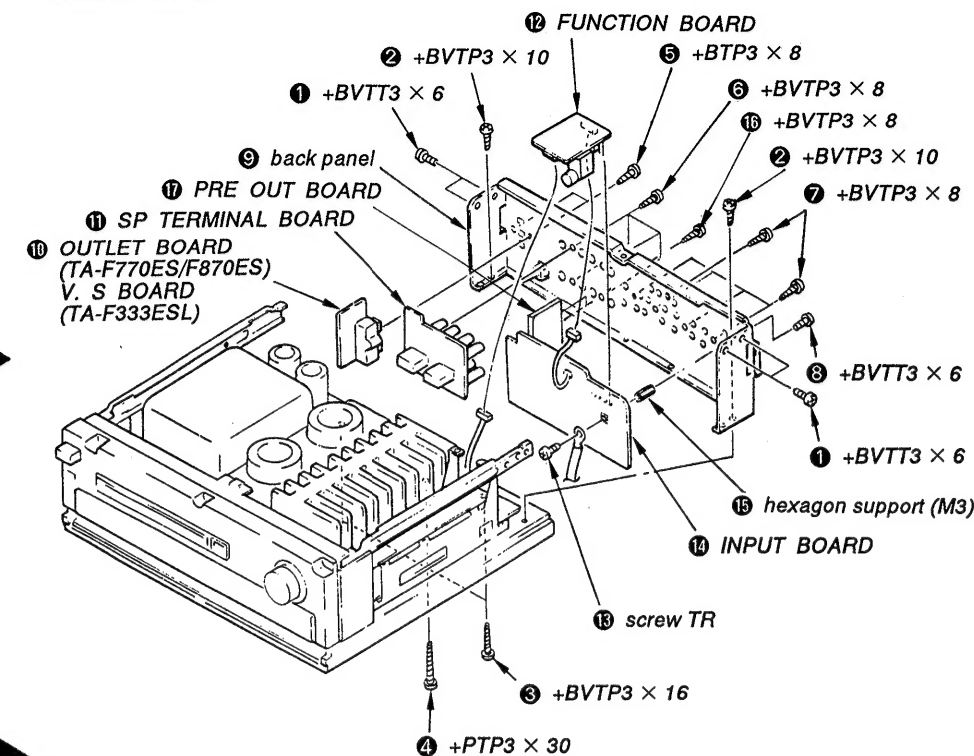
### CASE



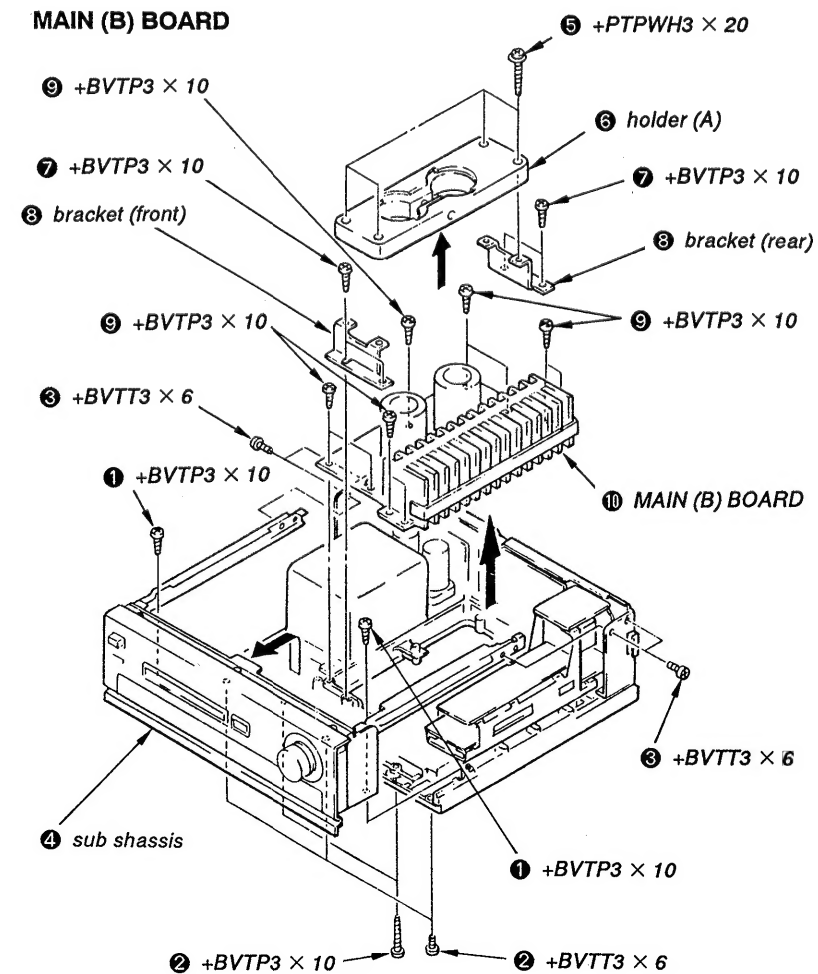
### MAIN (B) BOARD CHECKING METHOD



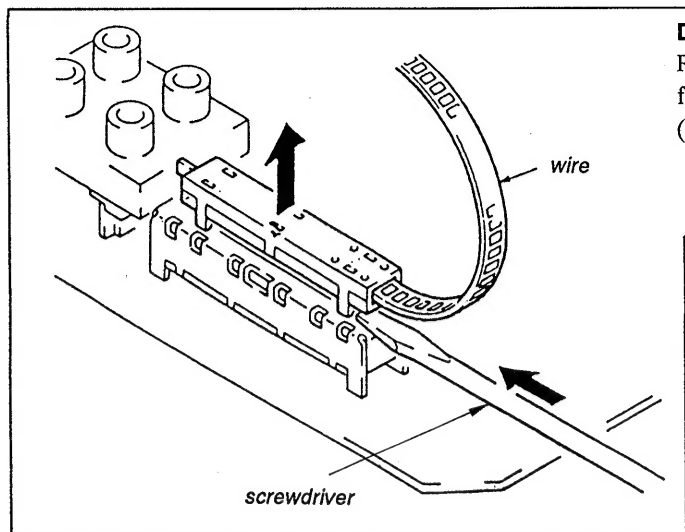
### BACK PANEL



### MAIN (B) BOARD



## SECTION 3 SWITCH DISASSEMBLY AND ASSEMBLY



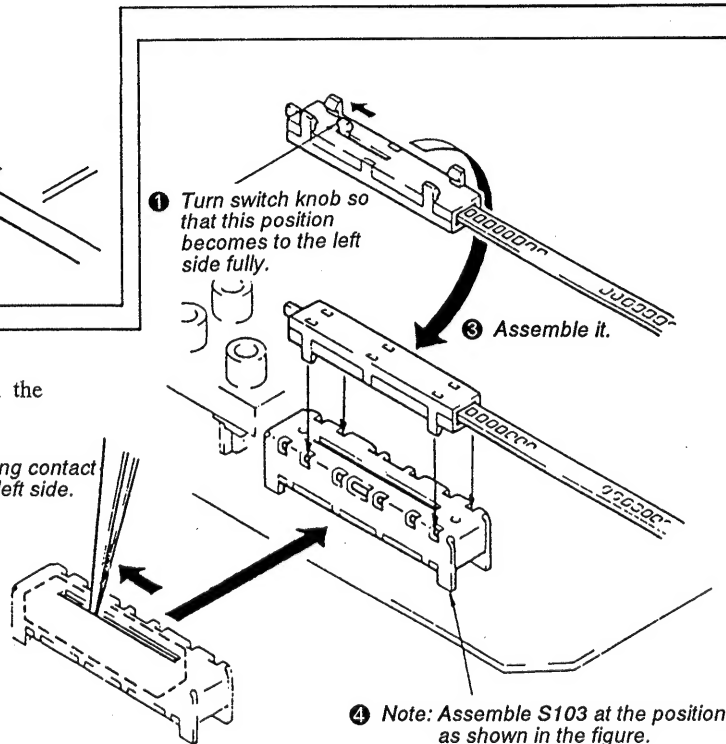
### DISASSEMBLY

Remove by inserting screwdriver as shown in the left figure.

(Don't pull the wire. It causes malfunction.)

### ASSEMBLY

Assemble in the numerical order given as shown in the right figure.



## SECTION 4 ELECTRICAL ADJUSTMENTS

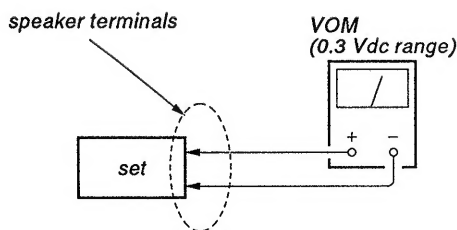
**Note:** adjustment should be performed 5 minutes later, after the power switch is on.

### Offset Adjustment

#### Setting:

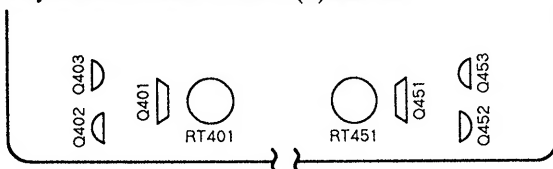
OPERATION switch: STEREO  
Input signal: No signal input

#### Procedure:



Adjust RT401 (L-CH) and RT-451 (R-CH) for 0 V reading on the VOM.

#### Adjustment Location: MAIN (A) BOARD



### Bias Current Adjustment

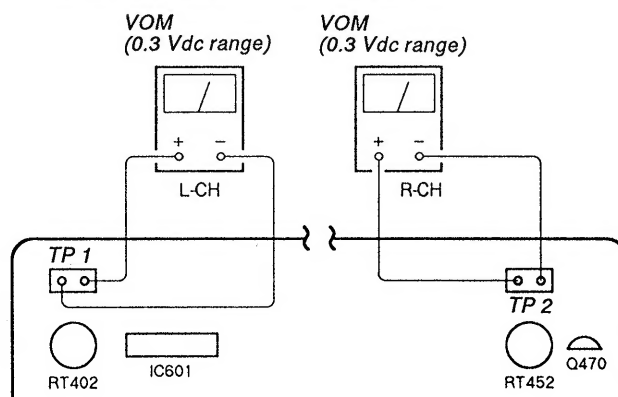
#### Setting:

OPERATION switch: STEREO  
Input signal: No signal input

#### Procedure:

Adjust RT402 (L-CH) and RT-452 (R-CH) so that VOM reading of TP-1 (L-CH), TP-2 (R-CH) become 35 mv.

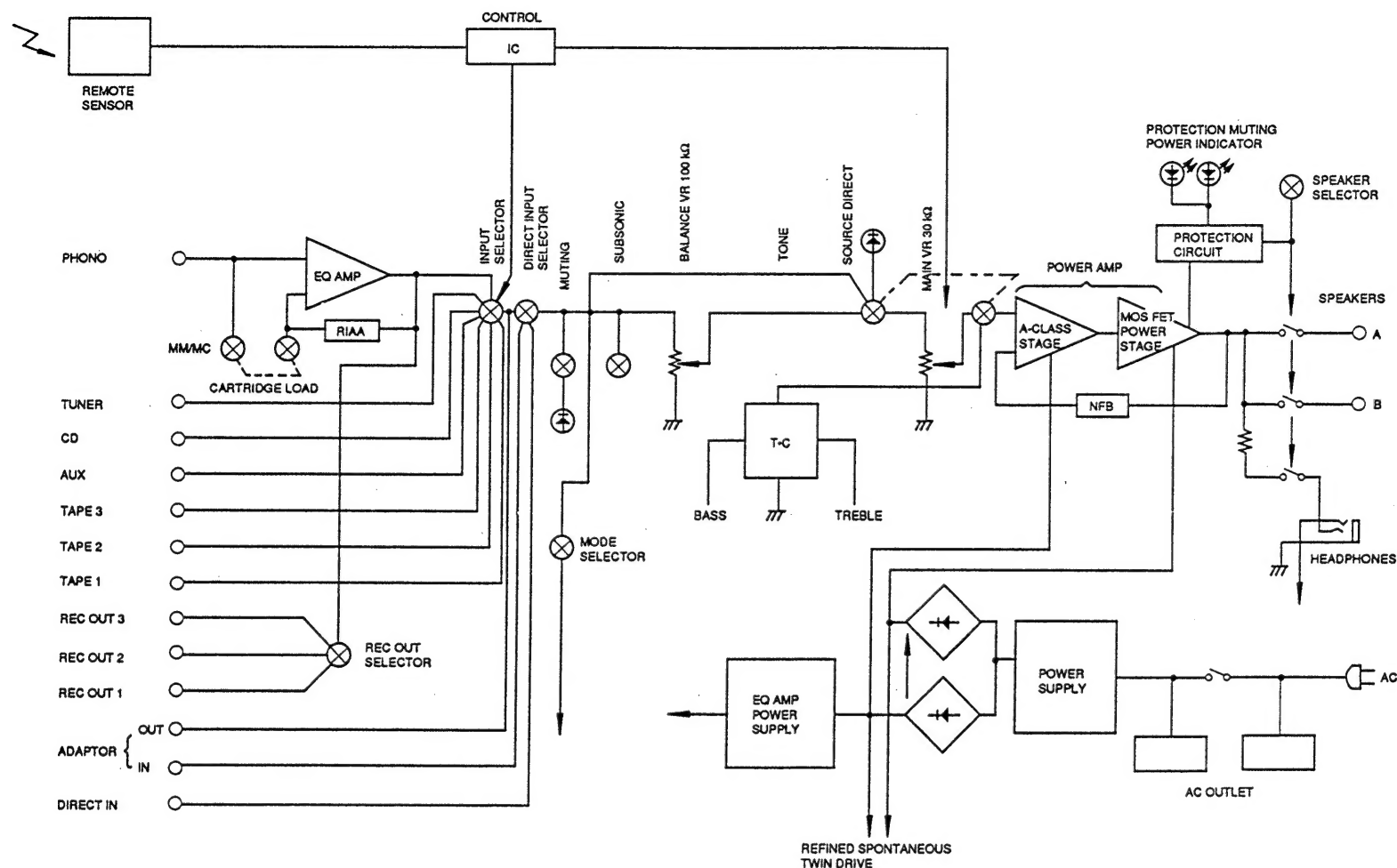
#### Adjustment Location: MAIN (B) BOARD



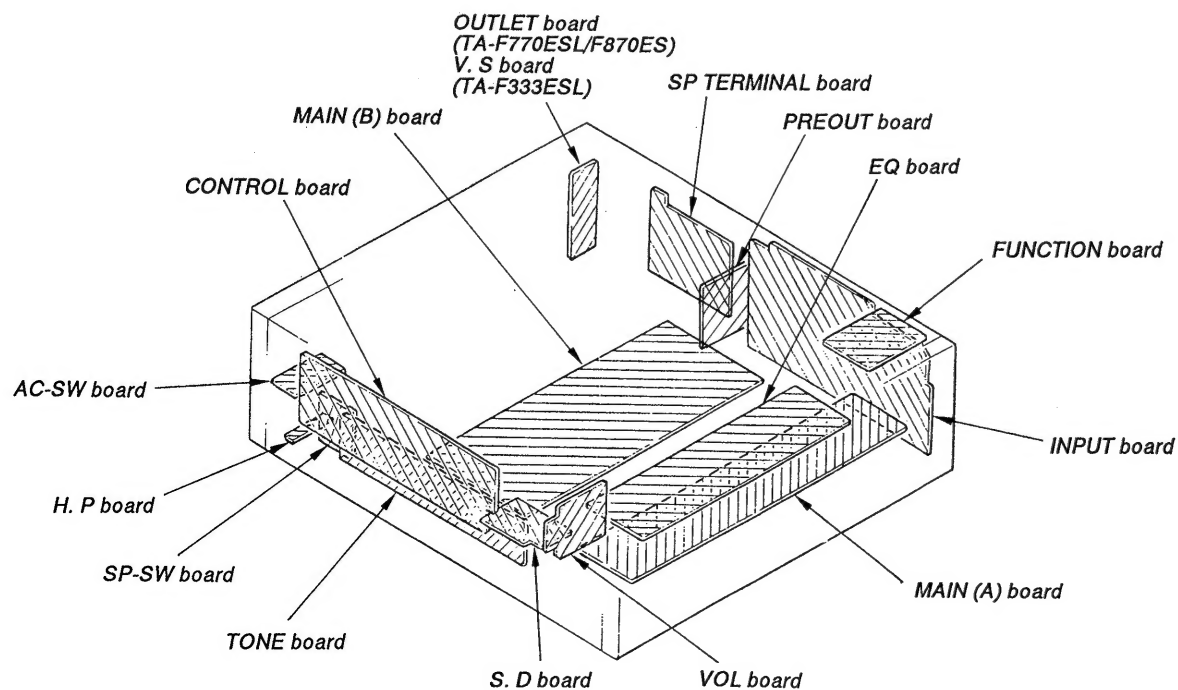


## SECTION 5 DIAGRAMS

### 5-1. BLOCK DIAGRAM



### 5-2. CIRCUIT BOARDS LOCATION



#### Note on Printed Wiring Board:

##### Note:

- — : parts extracted from the component side.

#### Note on Schematic Diagram:

##### Note:

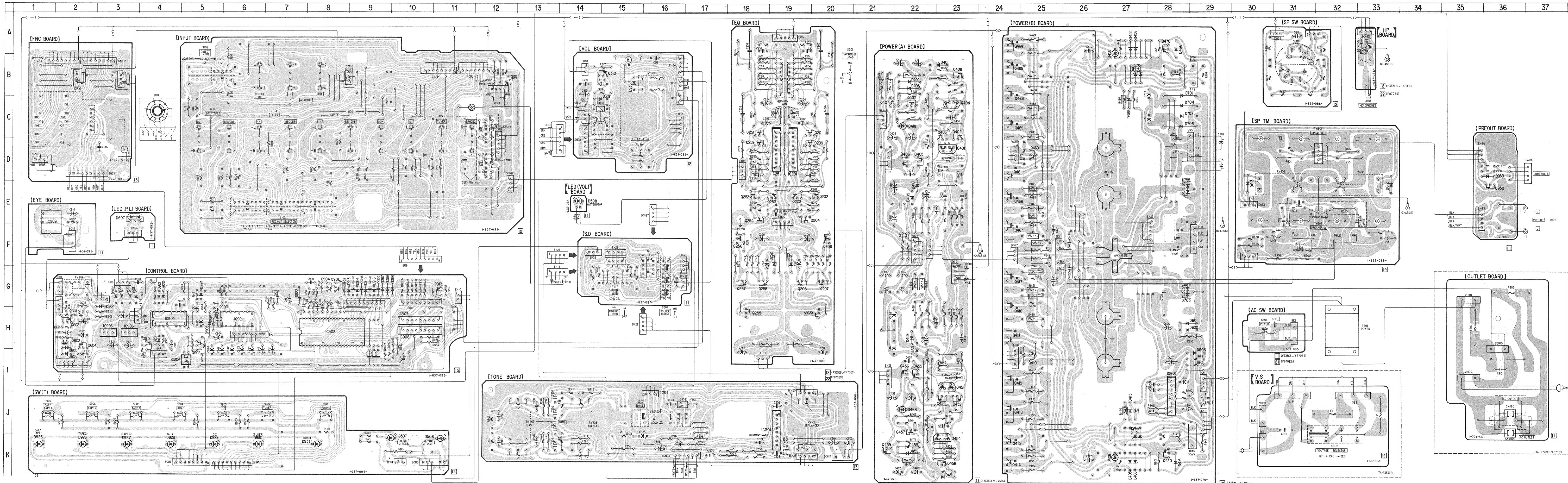
- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\text{F}$  50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $\frac{1}{4}$  W or less unless otherwise specified.
- % : indicates tolerance.
- Components for right channel have same values as for left channel.
- : nonflammable resistor.
- : fusible resistor.

**Note:** The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

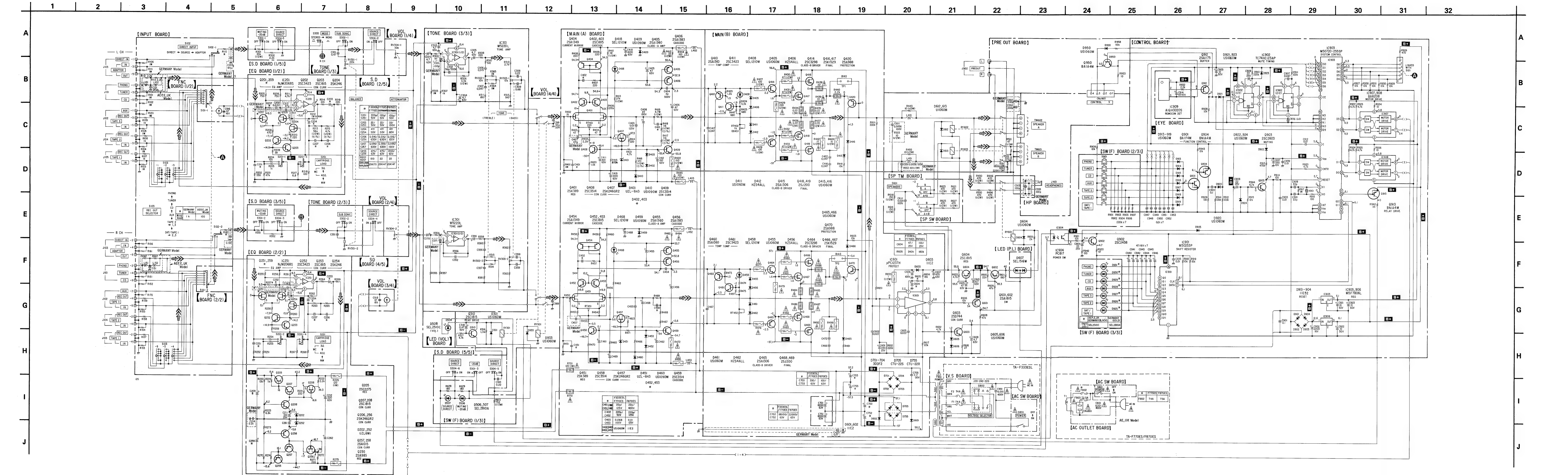
- $B+$  : B + Line.
- $B-$  : B - Line.
- : adjustment for repair.
- Voltages are taken with a VOM (10 M $\Omega/V$ ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
- : PHONO



5-3. PRINTED WIRING BOARDS • See page 22, 23 for Semiconductor Lead Layouts and Semiconductor Location. • See page 11 for Notes.





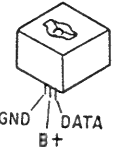


● Semiconductor Location

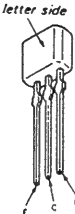
Ref. No.	Location	Ref. No.	Location
D202	F-19	IC601	I-28
D252	F-19	IC901	H-6
D301	C-14	IC902	H-4
D401	B-23	IC903	H-8
D402	B-22	IC904	I-5
D403	B-22	IC905	H-3
D405	K-27	IC906	H-3
D406	K-27	IC907	H-10
D408	K-27	IC908	H-10
D409	E-22	IC909	E-1
D410	E-22		
D411	K-27	Q201	C-19
D412	K-27	Q202	E-20
D415	J-27	Q203	E-19
D416	K-28	Q204	E-19
D418	C-22	Q205	H-20
D451	K-23	Q206	F-20
D452	K-22	Q207	G-20
D453	K-22	Q208	G-19
D455	A-27	Q209	D-19
D456	A-27	Q251	C-18
D458	A-27	Q252	E-18
D459	H-22	Q253	E-19
D460	H-22	Q254	E-18
D461	B-27	Q255	H-18
D462	B-27	Q256	F-18
D465	C-27	Q257	G-18
D466	A-28	Q258	G-18
D468	J-22	Q259	D-18
D506	K-11	Q310	B-15
D507	K-10	Q401	D-23
D508	E-14	Q402	C-23
D601	H-28	Q403	C-23
D602	H-28	Q404	C-23
D603	I-29	Q405	D-22
D604	G-3	Q406	D-22
D605	H-2	Q407	C-22
D606	I-2	Q408	B-23
D607	E-3	Q409	C-21
D612	E-33	Q410	I-25
D613	E-30	Q411	H-24
D701	C-28	Q414	K-24
D702	C-28	Q415	K-24
D703	C-28	Q416	H-24
D704	C-28	Q417	G-24
D705	G-28	Q418	J-24
D755	E-28	Q419	I-24
D901	G-3	Q420	K-28
D902	G-3	Q451	I-23
D903	G-3	Q452	J-23
D904	G-3	Q453	J-23
D905	H-5	Q454	K-23
D913	G-8	Q455	I-22
D914	G-9	Q456	J-22
D915	G-9	Q457	J-22
D916	G-9	Q458	K-23
D917	G-9	Q459	K-21
D918	G-10	Q460	D-25
D919	G-9	Q461	D-24
D920	G-4	Q464	A-24
D921	G-4	Q465	B-24
D922	G-7	Q466	E-24
D923	H-4	Q467	F-24
D924	G-5	Q468	C-24
D925	K-1	Q469	C-24
D926	K-2	Q470	A-28
D927	K-3	Q601	H-2
D928	K-4	Q602	H-2
D929	K-5	Q603	H-2
D930	K-6	Q604	H-2
D931	K-8	Q901	G-8
D933	B-15	Q902	H-5
D950	D-36	Q903	H-5
		Q904	G-8
IC201	D-19	Q912	H-4
IC251	D-19	Q913	G-11
IC301	J-19	Q950	E-36

● Semiconductor Lead Layouts

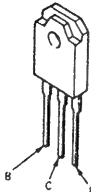
**A1QH3020S**



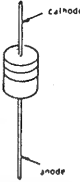
**2SA1175-FEK**  
**2SC2785-HFE**




**2SJ200-Y**  
**2SK1529-Y**



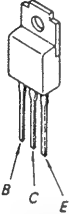
**HZS6B1L**  
**HZS6C3L**  
**1SS120**  
**11ES2**



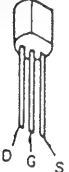
**M5F7806L**



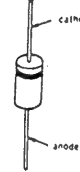
**2SA1306A-0**



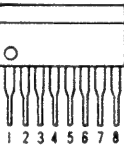
**2SK147-V**  
**2SK170-V**



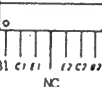
**HZS6B1L**  
**HZS6C3L**  
**1SS120**  
**11ES2**




**μ PC1237HA**



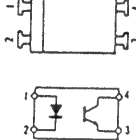
**2SA1349-GR. BL**




**2SK246-GR2**



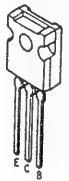
**PC817**



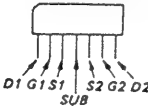
**DTA114ES**  
**DTC114ES**  
**DTC124ES**  
**2SC2603-EF**



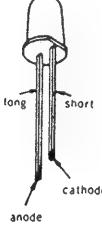
**2SA1360-0**  
**2SC3423-0**



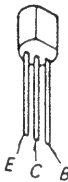
**2SK389-GR**



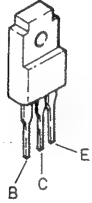
**SEL1210W**



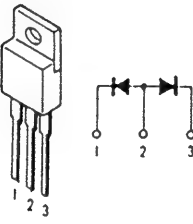
**2SA988-PAFAEA**  
**2SA1015-GR**  
**2SC1815-BL**




**2SD1763A**



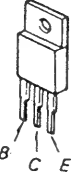
**CTU-22R**




**SEL1516W**



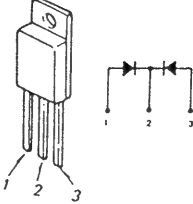
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**2SA1383**  
**2SC2275-P**  
**2SC3514**



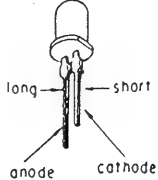
**2SD774-34**



**CTU-22S**



**SEL2510C-D**  
**SEL2810A**



## SECTION 6 EXPLODED VIEWS

### NOTE:

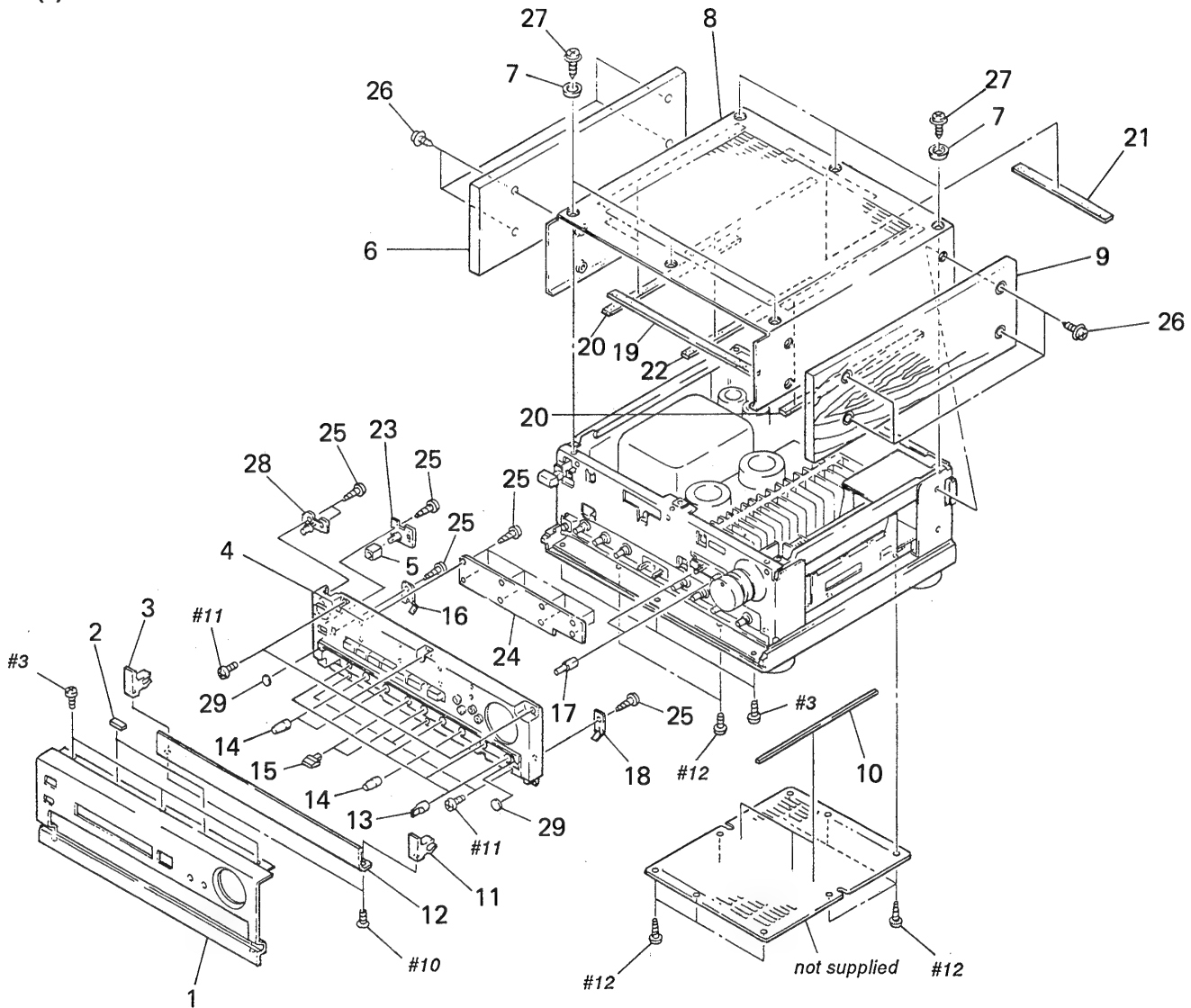
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts  
Example:  
KNOB, BALANCE (WHITE) ... (RED)  

↑  
Parts Color

↑  
Cabinet's Color
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

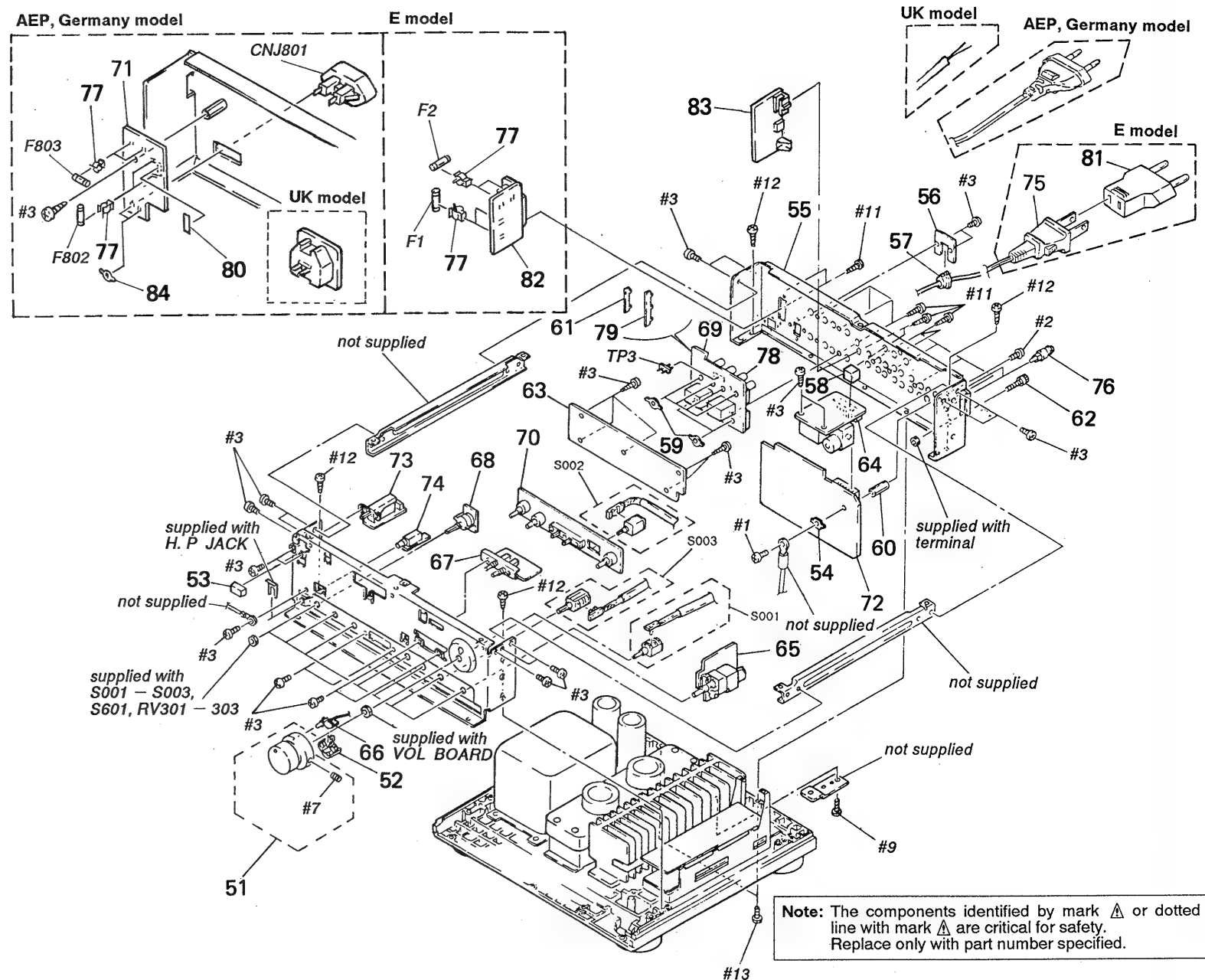
The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

### (1) CABINET SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	A-4323-753-A	PANEL ASSY, FRONT (F333ESL)		11	4-942-226-11	ARM (R) (F770ES(GOLD)/F870ES(GOLD))	
1	A-4325-074-A	PANEL ASSY, FRONT (F770ES(BLACK))		12	X-4941-192-1	LID ASSY (E)	
1	A-4325-077-A	PANEL ASSY, FRONT (F770ES(GOLD))		12	4-946-474-01	LID (F770ES(BLACK)/F870ES(BLACK))	
1	A-4325-089-A	PANEL ASSY, FRONT (F870ES(BLACK))		12	4-946-474-11	LID (F770ES(GOLD)/F870ES(GOLD))	
1	A-4325-090-A	PANEL ASSY, FRONT (F870ES(GOLD))		13	4-942-241-01	KNOB (SQUARE) (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
1	A-4325-233-A	PANEL ASSY, FRONT (F770ES)		13	4-942-241-11	KNOB (SQUARE) (F770ES(GOLD)/F870ES(GOLD))	
2	9-911-840-XX	CUSHION, RUBBER		14	4-942-240-01	KNOB (ROUND) (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
3	4-942-225-01	ARM (L) (F333ESL/F770ES(BLACK)/F870ES(BLACK))		14	4-942-240-11	KNOB (ROUND) (F770ES(GOLD)/F870ES(GOLD))	
3	4-942-225-11	ARM (L) (F770ES(GOLD)/F870ES(GOLD))		15	4-942-228-01	KNOB (3X13) (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
4	X-4941-153-1	PANEL (BASE) ASSY (F333ESL/F770ES(BLACK):AE2, UK)		15	4-942-228-11	KNOB (3X13) (F770ES(GOLD)/F870ES(GOLD))	
4	X-4941-820-1	PANEL ASSY, BASE (F770ES(BLACK):AE1, Germany/F870ES(BLACK))		16	* 4-942-233-01	SPRING (L), PLATE	
4	X-4941-821-1	PANEL ASSY, BASE (F770ES(GOLD)/F870ES(GOLD))		17	4-931-641-01	BUTTON (D1A. 4) (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
5	4-942-566-01	COVER, LED		17	4-931-641-11	BUTTON (D1A. 4) (F770ES(GOLD)/F870ES(GOLD))	
6	X-4885-922-1	PANEL (L) ASSY, SIDE (F770ES(BLACK):Germany/F870ES(BLACK))		18	* 4-942-234-01	SPRING (R), PLATE	
6	X-4941-857-1	PANEL (L) ASSY, SIDE (F333ESL/F770ES(BLACK):AEP)		19	* 4-916-782-71	DAMPER (F333ESL/F770ES)	
6	X-4941-889-1	PANEL (L) ASSY, SIDE (F770ES(GOLD)/F870ES(GOLD))		19	* 4-929-218-11	DAMPER (F870ES)	
7	4-923-474-01	RING, ORNAMENTAL (F333ESL/F770ES(BLACK)/F870ES(BLACK))		20	* 4-929-217-01	CUSHION (F870ES)	
7	4-928-025-21	ESCUTCHEON (TOP PLATE) (F770ES(GOLD)/F870ES(GOLD))		21	* 4-916-761-01	SHEET, DAMPER (F870ES)	
8	* 4-931-944-31	CASE (F333ESL/F770ES(BLACK)/F870ES(BLACK))		22	4-916-782-21	SHEET (A) (F870ES)	
8	* 4-931-944-51	CASE (F770ES(GOLD)/F870ES(GOLD))		23	* 1-637-092-11	LED (P.L.) BOARD	
9	X-4885-823-1	PANEL (R) ASSY, SIDE (F770ES(GOLD)/F870ES(GOLD))		24	* 1-637-094-12	SW (F) BOARD	
9	X-4941-890-1	PANEL (R) ASSY, SIDE (F770ES(BLACK):Germany/F870ES(BLACK))		25	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
9	X-4941-958-1	PANEL (R) ASSY, SIDE (F333ESL/F770ES(BLACK):AEP)		26	4-847-802-00	SCREW (UK)	
10	4-916-782-11	SHEET		26	4-885-979-11	SCREW (4X25) (AEP, E, Germany)	
11	4-942-226-01	ARM (R) (F333ESL/F770ES(BLACK)/F870ES(BLACK))		27	3-704-366-01	SCREW (CASE) (M3X8) (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
				27	3-704-366-11	SCREW (CASE) (M3X8) (F770ES(GOLD)/F870ES(GOLD))	
				28	* 1-637-095-11	EYE BOARD	
				29	4-879-274-01	SPACER	

## (2) FRONT CHASSIS SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	X-4941-154-1	KNOB (D1A. 55) ASSY (F333ESL/F770ES(BLACK)/F870ES(BLACK))		70	* 1-637-090-12	TONE BOARD	
51	X-4941-817-1	KNOB (D1A. 55) ASSY (F770ES(GOLD)/F870ES(GOLD))		71	* 1-640-345-11	OUTLET BOARD (AEP, UK, Germany)	
52	* 4-901-919-00	HOUSE, LED LAMP		72	* 1-637-091-12	INPUT BOARD	
53	4-942-032-01	KNOB (POWER) (F333ESL/F770ES(BLACK)/F870ES(BLACK))		73	* 1-637-085-11	AC SW BOARD	
53	4-942-032-11	KNOB (POWER) (F770ES(GOLD)/F870ES(GOLD))		74	* 1-637-086-11	H. P. BOARD	
54	* 4-835-639-00	PLATE, GROUND		75	Δ 1-559-272-21	CORD, POWER (UK)	
55	* 4-945-371-01	PANEL, BACK (F770ES(BLACK):Germany)		75	Δ 1-559-297-31	CORD, POWER (E)	
55	* 4-945-371-11	PANEL, BACK (UK)		75	Δ 1-575-953-11	CORD, POWER (AEP, Germany)	
55	* 4-945-371-21	PANEL, BACK (F770ES(BLACK):AEP)		76	Δ 1-506-113-00	SHORT PLUG	
55	* 4-945-371-31	PANEL, BACK (F770ES(GOLD)/F870ES(GOLD))		77	1-533-183-11	HOLDER, FUSE	
55	* 4-945-372-01	PANEL, BACK (E)		78	1-537-331-11	TERMINAL BOARD (SP) (Germany:F870ES)	
56	* 4-923-873-01	BRACKET, CORD STOPPER (F333ESL/F770ES(BLACK)/F870ES(BLACK))		78	* 1-537-378-11	TERMINAL BOARD (SP) (AE1, E, UK, Germany:F770ES)	
56	* 4-923-873-11	BRACKET, CORD STOPPER (F770ES(GOLD)/F870ES(GOLD))		78	* 1-537-380-11	TERMINAL BOARD (SP) (AE2)	
57	2-352-626-01	BUSHING, CORD		79	* 1-560-242-11	BUS BAR 3P	
58	9-911-843-XX	CUSHION (TU)		80	3-701-947-18	LABEL, FUSE	
59	* 4-843-416-11	PLATE, FIXED, CAP		81	Δ 1-569-007-11	ADAPTER, CONVERSION 2P (E)	
60	* 2-280-622-51	SUPPORT (M3), HEXAGON		82	* 1-637-837-12	V. S. BOARD (E)	
61	* 1-580-242-61	BUS BAR 2P		83	* 1-639-110-11	PREOUT BOARD	
62	* 1-535-691-21	TERMINAL (F333ESL/F770ES)		84	* 4-923-814-01	PLATE, CONNECTION (AEP, UK, Germany)	
62	* 1-535-691-31	TERMINAL (F870ES)		CNJ801	Δ 1-526-794-11	OUTLET, AC (AEP, Germany)	
63	* A-4345-485-A	CONTROL BOARD, COMPLETE		CNJ801	Δ 1-526-751-00	OUTLET, AC (UK)	
64	* 1-637-081-11	FUNCTION BOARD (F870ES)		F1	Δ 1-532-350-00	FUSE, TIME-LAG 4A (F333ESL/F770ES)	
64	* 1-637-081-13	FUNCTION BOARD (F333ESL/F770ES)		F2	Δ 1-532-350-00	FUSE, TIME-LAG 4A (F333ESL/F770ES)	
65	* 1-637-082-12	VOL BOARD		F802	Δ 1-532-299-00	FUSE, TIME-LAG 5A (F870ES)	
66	* 1-637-084-11	LED (VOL) BOARD		F802	Δ 1-532-350-00	FUSE, TIME-LAG 4A (F333ESL/F770ES)	
67	* 1-637-087-11	S. D. BOARD		F803	Δ 1-532-286-00	FUSE, TIME-LAG 2.5A (F770ES/F870ES)	
68	* 1-637-088-12	SP-SW BOARD		S001	1-572-546-11	SWITCH, ROTARY SLIDE (REMOTE)	
69	* 1-637-089-12	SP TERMINAL BOARD		S002	1-572-547-11	SWITCH, ROTARY SLIDE (REMOTE)	
				S003	1-572-548-11	SWITCH, ROTARY SLIDE (REMOTE)	
				TP3	1-535-139-00	BASE POST 14MM (10MM PITCH) 2P	



[illegible]

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	4-931-966-11	RING, ORNAMENTAL (F870ES(GOLD))		C701	1-125-653-11	CAP, ELECT 8200MF (F870ES)	
101	4-931-967-02	RING, ORNAMENTAL (F333ESL/F770ES(BLACK))		C701	1-125-654-11	CAP, ELECT 8200MF (F333ESL/F770ES)	
101	4-931-967-21	RING, ORNAMENTAL (F770ES(GOLD))		C702	1-125-655-11	CAP, ELECT 22000MF (F870ES)	
101	9-910-999-33	RING, ORNAMENTAL (F870ES(BLACK))		C702	1-125-656-11	CAP, ELECT 18000MF (F333ESL/F770ES)	
102	4-908-888-01	FOOT, TUNING (F333ESL/F770ES)		C751	1-125-653-11	CAP, ELECT 8200MF (F870ES)	
102	4-908-888-11	FOOT, TUNING (F870ES)		C751	1-125-654-11	CAP, ELECT 8200MF (F333ESL/F770ES)	
103	* A-4345-325-A	MAIN (A) BOARD, COMPLETE (E333ESL/F770ES:AEP, UK)		C752	1-125-656-11	CAP, ELECT 18000MF (F333ESL/F770ES)	
103	* A-4345-331-A	MAIN (A) BOARD, COMPLETE (F770ES:Germany)		C752	1-125-655-11	CAP, ELECT 22000MF (F870ES)	
103	* A-4345-358-A	MAIN (A) BOARD, COMPLETE (F870ES)		D705	8-719-300-27	DIODE CTU-22S	
104	4-931-976-01	WASHER (BS)		D755	8-719-300-25	DIODE CTU-22R	
105	3-655-653-21	BAND (TAITON), BINDING		Q205	8-729-127-53	TRANSISTOR 2SC2275-P	
106	4-901-949-01	SHEET, INSULATING		Q255	8-729-141-10	TRANSISTOR 2SA985-P	
107	* A-4345-326-A	MAIN (B) BOARD, COMPLETE (E333ESL/F770ES:AEP, UK)		Q411	8-729-203-45	TRANSISTOR 2SC3423-0	
107	A-4345-332-A	MAIN (B) BOARD, COMPLETE (F770ES:Germany)		Q414	8-729-208-72	TRANSISTOR 2SD1763A	
107	* A-4345-359-A	MAIN (B) BOARD, COMPLETE (F870ES)		Q415	8-729-208-38	TRANSISTOR 2SA1306A-0	
108	* A-4345-327-A	EQ BOARD, COMPLETE (E333ESL/F770ES:AEP, UK)		Q416	8-729-232-45	TRANSISTOR 2SK1529-Y	
108	* A-4345-333-A	EQ BOARD, COMPLETE (F770ES:Germany)		Q417	8-729-232-45	TRANSISTOR 2SK1529-Y	
108	* A-4345-360-A	EQ BOARD, COMPLETE (F870ES)		Q418	8-729-232-46	TRANSISTOR 2SJ200-Y	
109	4-921-437-01	SCREW (M3X20), TAPPING		Q419	8-729-232-46	TRANSISTOR 2SJ200-Y	
110	* 1-560-242-31	BUS BAR 5P		Q461	8-729-203-45	TRANSISTOR 2SC3423-0	
111	* 4-931-964-01	SCREW (M4X6)		Q464	8-729-208-72	TRANSISTOR 2SD1763A	
112	* 4-921-402-01	HEAT SINK		Q465	8-729-208-38	TRANSISTOR 2SA1306A-0	
113	* 1-560-242-11	BUS BAR 3P		Q466	8-729-232-45	TRANSISTOR 2SK1529-Y	
114	* 1-560-242-21	BUS BAR 4P		Q467	8-729-232-45	TRANSISTOR 2SK1529-Y	
115	4-309-378-00	WASHER		Q468	8-729-232-46	TRANSISTOR 2SJ200-Y	
116	* 4-931-970-01	CUSHION		Q469	8-729-232-46	TRANSISTOR 2SJ200-Y	
117	* 3-346-266-21	PLATE, GROUND		T901	△1-450-485-11	TRANSFORMER, POWER (UK)	
118	* 4-916-791-01	PLATE, GROUND, 5P		T901	△1-450-486-11	TRANSFORMER, POWER (F333ESL)	
119	X-4941-233-1	CHASSIS ASSY (F333ESL/F770ES)		T901	△1-450-487-11	TRANSFORMER, POWER (AE1, Germany:F770ES)	
119	X-4941-234-1	CHASSIS ASSY (F870ES)		T901	△1-450-488-11	TRANSFORMER, POWER (AE2, AEP:F770ES)	
				T901	△1-450-489-11	TRANSFORMER, POWER (Germany:F870ES)	
				TP1	1-535-139-00	BASE POST 14MM (10MM PITCH) 2P (F870ES)	
				TP2	1-535-139-00	BASE POST 14MM (10MM PITCH) 2P (F870ES)	

## SECTION 7

## ELECTRICAL PARTS LIST

## MAIN (A)

## NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS  
All resistors are in ohms.  
METAL: Metal-film resistor  
METAL OXIDE: Metal Oxide-film resistor  
F: nonflammable

- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS  
In each case, u:  $\mu$ , for example:  
uA...:  $\mu$ A..., uPA...:  $\mu$ PA...,  
uPB...:  $\mu$ PB..., uPC...:  $\mu$ PC...,  
uPD...:  $\mu$ PD...
- CAPACITORS  
uF:  $\mu$ F
- COILS  
uH:  $\mu$ H

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

When including parts by reference number, please include the board name.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	* A-4345-325-A	MAIN (A) BOARD, COMPLETE ***** (F333ESL/F770ES:AEP, UK)		C453	1-104-319-11	POLYSTYRENE 10000PF 10% 125V(F870ES)	
	* A-4345-331-A	MAIN (A) BOARD, COMPLETE(F770ES:Germany) *****		C453	1-137-337-21	FILM 0.068uF 2% 100V(F333ESL/F770ES)	
	* A-4345-358-A	MAIN (A) BOARD, COMPLETE (F870ES) *****		C454	1-107-044-00	MICA 3.3PF 500V	
	* 1-560-242-11	BUS BAR 3P		C455	1-124-918-11	ELECT 47uF 20% 63V	
	* 1-560-242-21	BUS BAR 4P		C456	1-124-918-11	ELECT 47uF 20% 63V	
	< CAPACITOR >			C457	1-104-274-11	POLYSTYRENE 47PF 10% 50V (F770ES:Germany/F870ES)	
C401	1-104-321-11	POLYSTYRENE 22PF 10% 400V(F870ES)		C458	1-124-748-11	ELECT 22uF 20% 100V	
C401	1-104-327-11	POLYSTYRENE 22PF 10% 125V (F333ESL/F770ES)		C460	1-104-321-11	POLYSTYRENE 22PF 10% 400V(F870ES)	
C402	1-104-233-00	POLYSTYRENE 220PF 10% 125V(F870ES)		C460	1-104-327-11	POLYSTYRENE 22PF 10% 125V (F333ESL/F770ES)	
C402	1-104-286-11	POLYSTYRENE 220PF 5% 50V (F333ESL/F770ES)		C461	1-124-130-00	ELECT 100uF 20% 63V	
C403	1-104-319-11	POLYSTYRENE 10000PF 10% 125V(F870ES)		C462	1-124-130-00	ELECT 100uF 20% 63V	
C403	1-137-337-21	FILM 0.068uF 2% 100V(F333ESL/F770ES)		C468	1-124-922-11	ELECT 1000uF 20% 63V	
C404	1-107-044-00	MICA 3.3PF 500V		C469	1-124-922-11	ELECT 1000uF 20% 63V	
C405	1-124-918-11	ELECT 47uF 20% 63V		< DIODE >			
C406	1-124-918-11	ELECT 47uF 20% 63V		D401	8-719-933-41	DIODE HZS6C3L	
C407	1-104-274-11	POLYSTYRENE 47PF 10% 50V (F770ES:Germany/F870ES)		D402	8-719-200-82	DIODE 11ES2 (F870ES)	
C408	1-124-748-11	ELECT 22uF 20% 100V		D402	8-719-912-20	DIODE 1SS120 (F333ESL/F770ES)	
C410	1-104-321-11	POLYSTYRENE 22PF 10% 400V(F870ES)		D403	8-719-200-82	DIODE 11ES2 (F870ES)	
C410	1-104-327-11	POLYSTYRENE 22PF 10% 125V (F333ESL/F770ES)		D403	8-719-912-20	DIODE 1SS120 (F333ESL/F770ES)	
C411	1-124-130-00	ELECT 100uF 20% 63V		D409	8-719-815-85	DIODE 1S1585	
C412	1-124-130-00	ELECT 100uF 20% 63V		D410	8-719-815-85	DIODE 1S1585	
C418	1-124-922-11	ELECT 1000uF 20% 63V		D418	8-719-303-13	DIODE SEL1210W	
C419	1-124-922-11	ELECT 1000uF 20% 63V		D451	8-719-933-41	DIODE HZS6C3L	
C451	1-104-321-11	POLYSTYRENE 22PF 10% 400V(F870ES)		D452	8-719-200-82	DIODE 11ES2 (F870ES)	
C451	1-104-327-11	POLYSTYRENE 22PF 10% 125V (F333ESL/F770ES)		D452	8-719-912-20	DIODE 1SS120 (F333ESL/F770ES)	
C452	1-104-233-00	POLYSTYRENE 220PF 10% 125V(F870ES)		D453	8-719-200-82	DIODE 11ES2 (F870ES)	
C452	1-104-286-11	POLYSTYRENE 220PF 5% 50V (F333ESL/F770ES)		D453	8-719-912-20	DIODE 1SS120 (F333ESL/F770ES)	
				D459	8-719-815-85	DIODE 1S1585	
				D460	8-719-815-85	DIODE 1S1585	
				D468	8-719-303-13	DIODE SEL1210W	
				< CONNECTOR >			
				EH15	* 1-564-507-11	PLUG, CONNECTOR 4P	
				EH21	* 1-564-507-11	PLUG, CONNECTOR 4P	
				EH22	* 1-564-507-11	PLUG, CONNECTOR 4P	
				EH23	* 1-564-506-11	PLUG, CONNECTOR 3P	
				EH24	* 1-564-508-11	PLUG, CONNECTOR 5P	



MAIN (A)

MAIN (B)

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
< COIL >							
L402	* 1-428-203-11	COIL, AIR-CORE		R445	1-219-022-11	FUSIBLE 100 5% 1/2W	
L403	* 1-428-203-11	COIL, AIR-CORE		R451	1-246-545-00	CARBON 1.0M 5% 1/4W	
L452	* 1-428-203-11	COIL, AIR-CORE		R452	1-247-713-11	CARBON 1K 5% 1/4W	
L453	* 1-428-203-11	COIL, AIR-CORE		R453	1-249-520-11	CARBON 47 5% 1/4W	
< TRANSISTOR >				R454	1-249-520-11	CARBON 47 5% 1/4W	
Q401	8-729-203-21	TRANSISTOR 2SK389-GR		R455	1-247-717-11	CARBON 2.2K 5% 1/4W	
Q402	8-729-281-54	TRANSISTOR 2SC1815-BL		R456	1-246-531-00	CARBON 270K 5% 1/4W	
Q403	8-729-281-54	TRANSISTOR 2SC1815-BL		R457	1-247-704-11	CARBON 220 5% 1/4W	
Q404	8-729-232-00	TRANSISTOR 2SA1349-GRBL		R458	1-219-030-11	FUSIBLE 220 5% 1/2W	
Q405	8-729-209-17	TRANSISTOR 2SA1360-0		R459	1-219-030-11	FUSIBLE 220 5% 1/2W	
Q406	8-729-104-91	TRANSISTOR 2SA1383		R460	1-214-937-00	METAL 1M 1% 1/2W	
Q407	8-729-201-56	TRANSISTOR 2SK246-GR2		R462	1-219-010-11	FUSIBLE 33 5% 1/2W	
Q408	8-729-104-18	TRANSISTOR 2SC3514		R463	1-249-490-11	CARBON 27K 5% 1/2W	
Q409	8-729-104-18	TRANSISTOR 2SC3514		R464	1-247-704-11	CARBON 220 5% 1/4W	
Q451	8-729-203-21	TRANSISTOR 2SK389-GR		R465	1-246-531-00	CARBON 270K 5% 1/4W	
Q452	8-729-281-54	TRANSISTOR 2SC1815-BL		R466	1-247-740-11	CARBON 120 5% 1/2W (F333ESL/F770ES)	
Q453	8-729-281-54	TRANSISTOR 2SC1815-BL		R466	1-259-533-11	CARBON 120 1% 1/2W (F870ES)	
Q454	8-729-232-00	TRANSISTOR 2SA1349-GRBL		R467	1-259-580-11	CARBON 11K 5% 1/2W	
Q455	8-729-209-17	TRANSISTOR 2SA1360-0		R468	1-259-580-11	CARBON 11K 5% 1/2W	
Q456	8-729-104-91	TRANSISTOR 2SA1383		R469	1-259-503-11	CARBON 4.7M 5% 1/2W	
Q457	8-729-201-56	TRANSISTOR 2SK246-GR2		R470	1-249-556-11	CARBON 1.5K 5% 1/4W	
Q458	8-729-104-18	TRANSISTOR 2SC3514		R471	1-247-721-11	CARBON 4.7K 5% 1/4W	
Q459	8-729-104-18	TRANSISTOR 2SC3514		R472	1-219-022-11	FUSIBLE 100 5% 1/2W	
< RESISTOR >				R494	1-219-022-11	FUSIBLE 100 5% 1/2W	
R401	1-246-545-00	CARBON 1.0M 5% 1/4W		R495	1-219-022-11	FUSIBLE 100 5% 1/2W	
R402	1-247-713-11	CARBON 1K 5% 1/4W		R701	1-219-024-91	FUSIBLE 120 5% 1/2W	
R403	1-249-520-11	CARBON 47 5% 1/4W		R751	1-219-024-91	FUSIBLE 120 5% 1/2W	
R404	1-249-520-11	CARBON 47 5% 1/4W		< VARIABLE RESISTOR >			
R405	1-247-717-11	CARBON 2.2K 5% 1/4W		RT401	1-237-498-21	RES, ADJ, METAL FILM 220	
R406	1-246-531-00	CARBON 270K 5% 1/4W		RT451	1-237-498-21	RES, ADJ, METAL FILM 220	
R407	1-247-704-11	CARBON 220 5% 1/4W		*****			
R408	1-219-030-11	FUSIBLE 220 5% 1/2W		* A-4345-326-A MAIN (B) BOARD, COMPLETE			
R409	1-219-030-11	FUSIBLE 220 5% 1/2W		*****			
R410	1-214-937-00	METAL 1M 1% 1/2W		(F333ESL/F770ES:AEP, UK)			
R412	1-219-010-11	FUSIBLE 33 5% 1/2W		* A-4345-332-A MAIN (B) BOARD, COMPLETE(F770ES:Germany)			
R413	1-249-490-11	CARBON 27K 5% 1/2W		*****			
R414	1-247-704-11	CARBON 220 5% 1/4W		* A-4345-359-A MAIN (B) BOARD, COMPLETE (F870ES)			
R415	1-246-531-00	CARBON 270K 5% 1/4W		*****			
R416	1-247-740-11	CARBON 120 5% 1/2W (F333ESL/F770ES)		* 1-560-242-31 BUS BAR 5P			
R416	1-259-533-11	CARBON 120 1% 1/2W (F870ES)		* 3-346-266-21 PLATE, GROUND			
R417	1-259-580-11	CARBON 11K 5% 1/2W		* 4-916-791-01 PLATE, GROUND, 5P			
R418	1-259-580-11	CARBON 11K 5% 1/2W		* 4-921-402-01 HEAT SINK			
R419	1-259-503-11	CARBON 4.7M 5% 1/2W		7-682-548-09 SCREW +B 3X8			
R420	1-249-556-11	CARBON 1.5K 5% 1/4W		< CAPACITOR >			
R421	1-247-721-11	CARBON 4.7K 5% 1/4W		C416	1-136-161-00	FILM 0.047uF 5% 50V	
R422	1-219-022-11	FUSIBLE 100 5% 1/2W		C417	1-136-161-00	FILM 0.047uF 5% 50V	
R444	1-219-022-11	FUSIBLE 100 5% 1/2W					

## MAIN (B)

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C422	1-136-161-00	FILM 0.047uF 5% 50V		< TRANSISTOR >			
C423	1-161-379-00	CERAMIC 0.01uF 20% 25V		Q410	8-729-209-17	TRANSISTOR 2SA1360-0	
		(F770ES:Germany/F870ES)		Q420	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
C466	1-136-161-00	FILM 0.047uF 5% 50V		Q460	8-729-209-17	TRANSISTOR 2SA1360-0	
C467	1-136-161-00	FILM 0.047uF 5% 50V		Q470	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
C472	1-136-161-00	FILM 0.047uF 5% 50V		< RESISTOR >			
C601	1-123-334-00	ELECT 220uF 20% 25V		R423	1-247-714-11	CARBON 1.2K 5% 1/4W	
C602	1-136-157-00	FILM 0.022uF 5% 50V		R424	1-247-719-11	CARBON 3.3K 5% 1/4W	
C603	1-136-157-00	FILM 0.022uF 5% 50V		R425	1-247-711-11	CARBON 680 5% 1/4W	
C604	1-124-122-11	ELECT 100uF 20% 50V(F870ES)		R427	1-219-022-11	FUSIBLE 100 5% 1/2W	
C604	1-124-910-11	ELECT 47uF 20% 50V(F333ESL/F770ES)		R428	1-219-022-11	FUSIBLE 100 5% 1/2W	
C606	1-123-380-00	ELECT 1uF 20% 100V		R429	1-219-030-11	FUSIBLE 220 5% 1/2W	
C607	1-126-066-11	ELECT 470uF 20% 63V		R430	1-212-974-00	FUSIBLE 47 5% 1/2W	
C703	1-128-201-11	ELECT 100uF 20% 63V(F870ES)		R431	1-212-974-00	FUSIBLE 47 5% 1/2W	
C703	1-124-920-11	ELECT 330uF 20% 63V(F333ESL/F770ES)		R432	1-212-974-00	FUSIBLE 47 5% 1/2W	
C705	1-137-213-11	FILM 2.2uF 5% 100V		R433	1-212-974-00	FUSIBLE 47 5% 1/2W	
C753	1-124-920-11	ELECT 330uF 20% 63V(F333ESL/F770ES)		R434	1-217-151-00	RES, METAL PLATE 0.22	
C753	1-128-201-11	ELECT 100uF 20% 63V(F870ES)		R435	1-217-151-00	RES, METAL PLATE 0.22	
< DIODE >				R436	1-217-151-00	RES, METAL PLATE 0.22	
D405	8-719-912-20	DIODE 1SS120		R437	1-217-151-00	RES, METAL PLATE 0.22	
D406	8-719-985-53	DIODE HZS4ALL		R438	△1-247-692-11	CARBON 22 5% 1/4W F	
D408	8-719-303-13	DIODE SEL1210W		R439	△1-247-692-11	CARBON 22 5% 1/4W F	
D411	8-719-912-20	DIODE 1SS120		R440	△1-247-717-11	CARBON 2.2K 5% 1/4W F	
D412	8-719-985-53	DIODE HZS4ALL		R441	1-249-460-11	CARBON 15K 5% 1/4W	
D415	8-719-912-20	DIODE 1SS120		R442	1-219-002-11	FUSIBLE 15 5% 1/2W	
D416	8-719-912-20	DIODE 1SS120		R447	1-247-711-11	CARBON 680 5% 1/4W	
D455	8-719-912-20	DIODE 1SS120		R449	1-219-002-11	FUSIBLE 15 5% 1/2W	
D456	8-719-985-53	DIODE HZS4ALL		R473	1-247-714-11	CARBON 1.2K 5% 1/4W	
D458	8-719-303-13	DIODE SEL1210W		R474	1-247-719-11	CARBON 3.3K 5% 1/4W	
D461	8-719-912-20	DIODE 1SS120		R475	1-247-711-11	CARBON 680 5% 1/4W	
D462	8-719-985-53	DIODE HZS4ALL		R477	1-219-022-11	FUSIBLE 100 5% 1/2W	
D465	8-719-912-20	DIODE 1SS120		R478	1-219-022-11	FUSIBLE 100 5% 1/2W	
D466	8-719-912-20	DIODE 1SS120		R479	1-219-030-11	FUSIBLE 220 5% 1/2W	
D601	8-719-200-82	DIODE 11ES2		R480	1-212-974-00	FUSIBLE 47 5% 1/2W	
D602	8-719-200-82	DIODE 11ES2		R481	1-212-974-00	FUSIBLE 47 5% 1/2W	
D603	8-719-200-82	DIODE 11ES2		R482	1-212-974-00	FUSIBLE 47 5% 1/2W	
D701	8-719-230-02	DIODE 30DF2		R483	1-212-974-00	FUSIBLE 47 5% 1/2W	
D702	8-719-230-02	DIODE 30DF2		R484	1-217-151-00	RES, METAL PLATE 0.22	
D703	8-719-230-02	DIODE 30DF2		R485	1-217-151-00	RES, METAL PLATE 0.22	
D704	8-719-230-02	DIODE 30DF2		R486	1-217-151-00	RES, METAL PLATE 0.22	
D705	8-719-300-27	DIODE CTU-22S		R487	1-217-151-00	RES, METAL PLATE 0.22	
D755	8-719-300-25	DIODE CTU-22R		R488	△1-247-692-11	CARBON 22 5% 1/4W F	
< CONNECTOR >				R489	△1-247-692-11	CARBON 22 5% 1/4W F	
EH25	* 1-564-508-11	PLUG, CONNECTOR 5P		R490	△1-247-717-11	CARBON 2.2K 5% 1/4W F	
EH41	* 1-564-505-11	PLUG, CONNECTOR 2P		R491	1-249-460-11	CARBON 15K 5% 1/4W	
< IC >				R492	1-219-002-11	FUSIBLE 15 5% 1/2W	
IC601	8-759-111-68	IC uPC1237HA		R497	1-247-711-11	CARBON 680 5% 1/4W	
				R499	1-219-002-11	FUSIBLE 15 5% 1/2W	
				R601	1-247-891-00	CARBON 330K 5% 1/4W	

**Note:** The components identified by mark △ or dotted line with mark △ are critical for safety.  
Replace only with part number specified.

MAIN (B)

EQ



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R602	1-247-887-00	CARBON 220K 5% 1/4W		C207	1-137-333-31	FILM 0.056uF 2% 100V(F870ES)	
R603	1-247-725-11	CARBON 10K 5% 1/4W		C207	1-137-335-31	FILM 0.056uF 2% 630V(F333ESL/F770ES)	
R604	1-249-461-11	CARBON 18K 5% 1/4W		C209	1-124-922-11	ELECT 1000uF 20% 63V(F870ES)	
R605	1-249-606-11	CARBON 180K 5% 1/4W (F870ES)		C209	1-126-066-11	ELECT 470uF 20% 63V(F333ESL/F770ES)	
R605	1-249-609-11	CARBON 240K 5% 1/4W(F333ESL/F770ES)		C211	1-124-122-11	ELECT 100uF 20% 50V	
R617	1-249-462-11	CARBON 22K 5% 1/4W		C212	1-123-604-00	ELECT 220uF 20% 63V	
R651	1-247-891-00	CARBON 330K 5% 1/4W		C213	1-101-880-00	CERAMIC 47PF 5% 50V	
R652	1-247-721-11	CARBON 4.7K 5% 1/4W				(F770ES:Germany/F870ES)	
R653	△1-212-934-00	FUSIBLE 1 5% 1/2W F		C214	1-161-379-00	CERAMIC 0.01uF 20% 25V	
		( VARIABLE RESISTOR )				(F770ES:Germany/F870ES)	
RT402	1-224-249-XX	RES, ADJ, SOLID 1K		C251	1-104-278-11	POLYSTYRENE 100PF 5% 50V	
RT452	1-224-249-XX	RES, ADJ, SOLID 1K				(F770ES:Germany/F870ES)	
		( CONNECTOR )		C251	1-104-290-11	POLYSTYRENE 330PF 5% 50V	
SE1	1-564-242-00	PIN, CONNECTOR 5P				(F333ESL/F770ES:AEP, UK)	
		( BASE POST )		C252	1-137-336-91	FILM 0.022uF 2% 100V	
TP1	1-535-139-00	BASE POST 14MM (10MM PITCH) 2P (F870ES)		C253	1-124-748-11	ELECT 22uF 20% 100V(F870ES)	
TP2	1-535-139-00	BASE POST 14MM (10MM PITCH) 2P (F870ES)		C253	1-124-916-11	ELECT 22uF 20% 63V(F333ESL/F770ES)	
		( CONNECTOR )		C254	1-124-918-11	ELECT 47uF 20% 63V(F333ESL/F770ES)	
VH4	* 1-564-104-00	PIN, CONNECTOR 3P		C254	1-126-359-11	ELECT 47uF 20% 80V(F870ES)	
VH5	* 1-564-241-00	PIN, CONNECTOR 4P		C256	1-137-332-31	FILM 0.016uF 2% 100V(F870ES)	
VH6	* 1-564-241-00	PIN, CONNECTOR 4P		C256	1-137-334-31	FILM 0.016uF 2% 630V(F333ESL/F770ES)	
		*****		C257	1-137-333-31	FILM 0.056uF 2% 100V(F870ES)	
		* A-4345-327-A EQ BOARD, COMPLETE		C257	1-137-335-31	FILM 0.056uF 2% 630V(F333ESL/F770ES)	
		*****		C259	1-124-922-11	ELECT 1000uF 20% 63V(F870ES)	
		(F333ESL/F770ES:AEP, UK)		C259	1-126-066-11	ELECT 470uF 20% 63V(F333ESL/F770ES)	
		* A-4345-333-A EQ BOARD, COMPLETE (F770ES:Germany)		C261	1-124-122-11	ELECT 100uF 20% 50V	
		*****		C262	1-123-604-00	ELECT 220uF 20% 63V	
		* A-4345-360-A EQ BOARD, COMPLETE (F870ES)		C263	1-101-880-00	CERAMIC 47PF 5% 50V	
		*****				(F770ES:Germany/F870ES)	
		* 4-921-402-01 HEAT SINK				( DIODE )	
		7-682-548-09 SCREW +B 3X8		D202	8-719-933-36	DIODE HZS6B1L	
		( CAPACITOR )		D252	8-719-933-36	DIODE HZS6B1L	
C201	1-104-278-11	POLYSTYRENE 100PF 5% 50V				( CONNECTOR )	
		(F770ES:Germany/F870ES)		EH17	* 1-564-508-11	PLUG, CONNECTOR 5P	
C201	1-104-290-11	POLYSTYRENE 330PF 5% 50V		EH18	* 1-564-506-11	PLUG, CONNECTOR 3P	
		(F333ESL/F770ES:AEP, UK)		EH19	* 1-564-506-11	PLUG, CONNECTOR 3P	
C202	1-137-336-91	FILM 0.022uF 2% 100V		EH20	* 1-564-507-11	PLUG, CONNECTOR 4P	
C203	1-124-748-11	ELECT 22uF 20% 100V(F870ES)				( IC )	
C203	1-124-916-11	ELECT 22uF 20% 63V(F333ESL/F770ES)		IC201	8-759-711-53	IC NJM2068S-D	
C204	1-124-918-11	ELECT 47uF 20% 63V(F333ESL/F770ES)		IC251	8-759-711-53	IC NJM2068S-D	
C204	1-126-359-11	ELECT 47uF 20% 80V(F870ES)				( TRANSISTOR )	
C206	1-137-332-31	FILM 0.016uF 2% 100V(F870ES)		Q201	8-729-214-73	TRANSISTOR 2SK147-V	
C206	1-137-334-31	FILM 0.016uF 2% 630V(F333ESL/F770ES)				(F770ES:Germany/F870ES)	
				Q201	8-729-217-04	TRANSISTOR 2SK170-V	
						(F333ESL/F770ES:AEP, UK)	
				Q202	8-729-203-45	TRANSISTOR 2SC3423-0	
				Q203	8-729-281-54	TRANSISTOR 2SC1815-BL	
				Q204	8-729-201-56	TRANSISTOR 2SK246-GR2	

Note: The components identified by mark △ or dotted line with mark △ are critical for safety.  
Replace only with part number specified.

EQ

FUNCTION

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q205	8-729-127-53	TRANSISTOR 2SC2275-P		R225	1-219-024-91	FUSIBLE 120 5% 1/2W	
Q206	8-729-201-56	TRANSISTOR 2SK246-GR2		R251	1-249-465-11	CARBON 47K 5% 1/4W	
Q207	8-729-281-54	TRANSISTOR 2SC1815-BL		R252	1-247-706-11	CARBON 330 5% 1/4W	
Q208	8-729-281-54	TRANSISTOR 2SC1815-BL		R253	1-247-713-11	CARBON 1K 5% 1/4W	
Q209	8-729-214-73	TRANSISTOR 2SK147-V (F770ES:Germany/F870ES)		R254	1-247-700-11	CARBON 100 5% 1/4W	
Q209	8-729-217-04	TRANSISTOR 2SK170-V (F333ESL/F770ES:AEP, UK)		R255	1-247-128-00	CARBON 750 5% 1/4W	
Q251	8-729-214-73	TRANSISTOR 2SK147-V (F770ES:Germany/F870ES)		R256	1-247-128-00	CARBON 750 5% 1/4W	
Q251	8-729-217-04	TRANSISTOR 2SK170-V (F333ESL/F770ES:AEP, UK)		R257	1-247-700-11	CARBON 100 5% 1/4W (F333ESL/F770ES:AEP, UK)	
Q252	8-729-203-45	TRANSISTOR 2SC3423-0		R257	1-249-512-11	CARBON 22 5% 1/4W (F770ES:Germany/F870ES)	
Q253	8-729-281-54	TRANSISTOR 2SC1815-BL		R258	1-247-708-11	CARBON 470 5% 1/4W	
Q254	8-729-201-56	TRANSISTOR 2SK246-GR2		R259	1-249-518-11	CARBON 39 5% 1/4W	
Q255	8-729-141-10	TRANSISTOR 2SA985-OP		R260	1-247-704-11	CARBON 220 5% 1/4W	
Q256	8-729-201-56	TRANSISTOR 2SK246-GR2		R261	1-247-721-11	CARBON 4. 7K 5% 1/4W	
Q257	8-729-201-53	TRANSISTOR 2SA1015-GR		R262	1-246-545-00	CARBON 1. 0M 5% 1/4W	
Q258	8-729-201-53	TRANSISTOR 2SA1015-GR		R263	1-249-844-11	CARBON 56K 1% 1/2W	
Q259	8-729-214-73	TRANSISTOR 2SK147-V (F770ES:Germany/F870ES)		R264	1-247-700-11	CARBON 100 5% 1/4W	
Q259	8-729-217-04	TRANSISTOR 2SK170-V (F333ESL/F770ES:AEP, UK)		R265	1-259-571-11	CARBON 4. 7K 1% 1/2W (F870ES)	
< RESISTOR >				R265	1-249-818-11	CARBON 4. 7K 1% 1/2W (F333ESL/F770ES)	
R201	1-249-465-11	CARBON 47K 5% 1/4W		R267	1-260-661-11	CARBON 6. 8 5% 1/4W	
R202	1-247-706-11	CARBON 330 5% 1/4W		R268	1-247-700-11	CARBON 100 5% 1/4W	
R203	1-247-713-11	CARBON 1K 5% 1/4W		R269	1-247-704-11	CARBON 220 5% 1/4W	
R204	1-247-700-11	CARBON 100 5% 1/4W		R270	1-247-725-11	CARBON 10K 5% 1/4W	
R205	1-247-128-00	CARBON 750 5% 1/4W		R271	1-247-704-11	CARBON 220 5% 1/4W	
R206	1-247-128-00	CARBON 750 5% 1/4W		R272	1-247-717-11	CARBON 2. 2K 5% 1/4W	
R207	1-247-700-11	CARBON 100 5% 1/4W (F333ESL/F770ES:AEP, UK)		R273	1-247-723-11	CARBON 6. 8K 5% 1/4W	
R207	1-249-512-11	CARBON 22 5% 1/4W (F770ES:Germany/F870ES)		R274	1-247-713-11	CARBON 1K 5% 1/4W	
R208	1-247-708-11	CARBON 470 5% 1/4W		R275	1-219-024-91	FUSIBLE 120 5% 1/2W	
R209	1-249-518-11	CARBON 39 5% 1/4W		< SWITCH >			
R210	1-247-704-11	CARBON 220 5% 1/4W		S201	1-554-019-21	SWITCH, SLIDE (REMOTE TYPE) (CARTRIDGE LOAD)	
R211	1-247-721-11	CARBON 4. 7K 5% 1/4W		*****			
R212	1-246-545-00	CARBON 1. 0M 5% 1/4W		* 1-637-081-11 FUNCTION BOARD (F870ES) *****			
R213	1-249-844-11	CARBON 56K 1% 1/2W		* 1-637-081-13 FUNCTION BOARD (F333ESL/F770ES) *****			
R214	1-247-700-11	CARBON 100 5% 1/4W		* 1-564-599-11 PIN, CONNECTOR 8P			
R215	1-249-818-11	CARBON 4. 7K 1% 1/2W (F333ESL/F770ES)		< CAPACITOR >			
R215	1-259-571-11	CARBON 4. 7K 1% 1/2W (F870ES)		C916	1-124-631-11	ELECT 47uF 20% 16V	
R217	1-260-661-11	CARBON 6. 8 5% 1/4W		< CONNECTOR >			
R218	1-247-700-11	CARBON 100 5% 1/4W		EH16	* 1-564-506-11	PLUG, CONNECTOR 3P	
R219	1-247-704-11	CARBON 220 5% 1/4W		EH35	* 1-564-512-11	PLUG, CONNECTOR 9P	
R220	1-247-725-11	CARBON 10K 5% 1/4W		EH40	* 1-564-505-11	PLUG, CONNECTOR 2P	
R221	1-247-704-11	CARBON 220 5% 1/4W		EH42	* 1-564-506-11	PLUG, CONNECTOR 3P	
R222	1-247-717-11	CARBON 2. 2K 5% 1/4W					
R223	1-247-723-11	CARBON 6. 8K 5% 1/4W					
R224	1-247-713-11	CARBON 1K 5% 1/4W					

**Note:** The components identified by mark  or dotted line with mark  are critical for safety.  
Replace only with part number specified.

SP-SW

SP TERMINAL

STONE

Ref.No.	Part No.	Description	Remark
	* 1-637-088-12	SP-SW BOARD *****	
		< CAPACITOR >	
C611	1-106-343-00	MYLAR 1000PF 5% 200V	
		< CONNECTOR >	
EH32	* 1-564-506-11	PLUG, CONNECTOR 3P	
		< RESISTOR >	
R618	1-247-741-11	CARBON 150 5% 1/2W	
R619	1-247-741-11	CARBON 150 5% 1/2W	
R621	1-247-747-11	CARBON 470 5% 1/2W	
R623	1-247-747-11	CARBON 470 5% 1/2W	
R625	1-247-747-11	CARBON 470 5% 1/2W	
R627	1-247-747-11	CARBON 470 5% 1/2W	
		< SWITCH >	
S601	1-572-107-11	SWITCH, ROTARY (SPEAKERS)	
*****			
	* 1-637-089-12	SP TERMINAL BOARD *****	
	* 1-560-242-11	BUS BAR 3P	
	* 1-560-242-61	BUS BAR 2P	
	* 4-843-416-11	PLATE, FIXED, CAP	
		< CAPACITOR >	
C501	1-106-361-00	MYLAR 0.0056uF 10% 100V (F770ES:Germany/F870ES)	
C502	1-102-820-00	CERAMIC 330PF 5% 50V (F770ES:Germany/F870ES)	
C551	1-106-361-00	MYLAR 0.0056uF 10% 100V (F770ES:Germany/F870ES)	
C552	1-102-820-00	CERAMIC 330PF 5% 50V (F770ES:Germany/F870ES)	
		< DIODE >	
D612	8-719-912-20	DIODE 1SS120	
D613	8-719-912-20	DIODE 1SS120	
		< CONNECTOR >	
EH31	* 1-564-506-11	PLUG, CONNECTOR 3P	
EH33	* 1-564-506-11	PLUG, CONNECTOR 3P	
EH45	* 1-564-507-11	PLUG, CONNECTOR 4P	
		< COIL >	
L401	* 1-422-009-13	COIL, AIR-CORE	
L451	* 1-422-009-13	COIL, AIR-CORE	

Ref.No.	Part No.	Description	Remark
		< RESISTOR >	
R443	1-247-727-11	CARBON 10 5% 1/2W	
R446	1-247-747-11	CARBON 470 5% 1/2W	
R450	1-247-747-11	CARBON 470 5% 1/2W	
R493	1-247-727-11	CARBON 10 5% 1/2W	
R496	1-247-747-11	CARBON 470 5% 1/2W	
R500	1-247-747-11	CARBON 470 5% 1/2W	
R501	1-249-689-11	CARBON 4.7K 5% 1/2W	
R502	1-249-657-11	CARBON 220 5% 1/2W	
R503	1-247-727-11	CARBON 10 5% 1/2W (F770ES:Germany/F870ES)	
R551	1-249-689-11	CARBON 4.7K 5% 1/2W	
R552	1-249-657-11	CARBON 220 5% 1/2W	
R553	1-247-727-11	CARBON 10 5% 1/2W (F770ES:Germany/F870ES)	
		< RELAY >	
RY602	1-515-676-11	RELAY	
RY603	1-515-676-11	RELAY	
		< TEST POINT >	
TP3	1-535-139-00	BASE POST 14MM (10MM PITCH) 2P	
*****			
	* 1-637-090-12	TONE BOARD *****	
		< CAPACITOR >	
C301	1-136-173-00	FILM 0.47uF 5% 50V	
C302	1-107-165-00	MICA 56PF 5% 50V	
C303	1-123-369-00	ELECT 4.7uF 20% 63V	
C304	1-123-369-00	ELECT 4.7uF 20% 63V	
C305	1-123-369-00	ELECT 4.7uF 20% 63V	
C306	1-136-155-00	FILM 0.015uF 5% 50V	
C307	1-136-161-00	FILM 0.047uF 5% 50V	
C308	1-136-169-00	FILM 0.22uF 5% 50V	
C309	1-136-175-00	FILM 0.68uF 5% 50V	
C320	1-123-369-00	ELECT 4.7uF 20% 63V	
C321	1-102-973-00	CERAMIC 100PF 5% 50V (F770ES:Germany/F870ES)	
C351	1-136-173-00	FILM 0.47uF 5% 50V	
C352	1-107-165-00	MICA 56PF 5% 50V	
C355	1-123-369-00	ELECT 4.7uF 20% 63V	
C356	1-136-155-00	FILM 0.015uF 5% 50V	
C357	1-136-161-00	FILM 0.047uF 5% 50V	
C358	1-136-169-00	FILM 0.22uF 5% 50V	
C359	1-136-175-00	FILM 0.68uF 5% 50V	
C370	1-123-369-00	ELECT 4.7uF 20% 63V	
C371	1-102-973-00	CERAMIC 100PF 5% 50V (F770ES:Germany/F870ES)	

TONE

INPUT

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
< IC >							
IC301	8-759-602-19	IC M5220L		C153	1-104-274-11	POLYSTYRENE 47PF (F770ES:Germany/F870ES)	10% 50V
< RESISTOR >				< CONNECTOR >			
R304	1-247-713-11	CARBON	1K 5% 1/4W	EH12	* 1-564-507-11	PLUG, CONNECTOR 4P	
R305	1-246-545-00	CARBON	1.0M 5% 1/4W	< JACK >			
R306	1-247-758-11	CARBON	3.3K 5% 1/2W	J101	1-507-831-41	JACK, PIN 6P (CD/TUNER/PHONO)	
R307	1-247-713-11	CARBON	1K 5% 1/4W	J102	1-507-831-41	JACK, PIN 6P (AUX/TAPE 3 REC OUT, IN)	
R308	1-247-704-11	CARBON	220 5% 1/4W	J103	1-507-831-41	JACK, PIN 6P (DIRECT IN/ADAPTOR IN, OUT)	
R310	1-259-421-11	CARBON	510 5% 1/4W	J104	1-507-920-00	JACK, PIN 4P (TAPE 2 REC OUT, ON)	
R311	1-247-703-11	CARBON	180 5% 1/4W	J105	1-507-920-00	JACK, PIN 4P (DAT/TAPE 1 REC OUT, ON)	
R312	1-247-718-11	CARBON	2.7K 5% 1/4W	< COIL >			
R313	1-249-551-11	CARBON	910 5% 1/4W	L101	1-424-397-11	COIL, CHOKE 200uH (F770ES:Germany/F870ES)	
R314	1-246-545-00	CARBON	1.0M 5% 1/4W	L102	1-424-397-11	COIL, CHOKE 200uH (F770ES:Germany/F870ES)	
R315	1-246-545-00	CARBON	1.0M 5% 1/4W	L151	1-424-397-11	COIL, CHOKE 200uH (F770ES:Germany/F870ES)	
R354	1-247-713-11	CARBON	1K 5% 1/4W	L152	1-424-397-11	COIL, CHOKE 200uH (F770ES:Germany/F870ES)	
R355	1-246-545-00	CARBON	1.0M 5% 1/4W	< RESISTOR >			
R356	1-247-758-11	CARBON	3.3K 5% 1/2W	R101	1-246-545-00	CARBON	1.0M 5% 1/4W
R357	1-247-713-11	CARBON	1K 5% 1/4W	R102	1-246-545-00	CARBON	1.0M 5% 1/4W
R358	1-247-704-11	CARBON	220 5% 1/4W	R103	1-246-545-00	CARBON	1.0M 5% 1/4W
R360	1-259-421-11	CARBON	510 5% 1/4W	R104	1-246-545-00	CARBON	1.0M 5% 1/4W
R361	1-247-703-11	CARBON	180 5% 1/4W	R105	1-246-545-00	CARBON	1.0M 5% 1/4W
R362	1-247-718-11	CARBON	2.7K 5% 1/4W	R106	1-246-545-00	CARBON	1.0M 5% 1/4W
R363	1-249-551-11	CARBON	910 5% 1/4W	R107	1-247-713-11	CARBON	1K 5% 1/4W
R364	1-246-545-00	CARBON	1.0M 5% 1/4W	R108	1-247-713-11	CARBON	1K 5% 1/4W
R365	1-246-545-00	CARBON	1.0M 5% 1/4W	R109	1-247-713-11	CARBON	1K 5% 1/4W
< VARIABLE RESISTOR >				R110	1-247-739-11	CARBON	100 5% 1/2W (F333ESL/F770ES:AEP, UK)
RV301	1-241-291-11	RES, VAR, CARBON 100K/100K (BALANCE)		R110	1-249-673-11	CARBON	1K 5% 1/2W (F770ES:Germany/F870ES)
RV302	1-241-292-11	RES, VAR, CARBON 10K (TREBLE)		R111	1-246-545-00	CARBON	1.0M 5% 1/4W
RV303	1-241-293-11	RES, VAR, CARBON 10K (BASS)		R112	1-259-436-11	CARBON	2.2K 5% 1/6W (F770ES:Germany/F870ES)
< SWITCH >				R113	1-259-436-11	CARBON	2.2K 5% 1/6W (F770ES:Germany/F870ES)
S302	1-572-549-11	SWITCH, PUSH (2 KEY) (SUB SONIC)		R120	1-246-545-00	CARBON	1.0M 5% 1/4W
S303	1-572-549-11	SWITCH, PUSH (2 KEY) (MODE)		R151	1-246-545-00	CARBON	1.0M 5% 1/4W
*****				R152	1-246-545-00	CARBON	1.0M 5% 1/4W
* 1-637-091-12 INPUT BOARD				R153	1-246-545-00	CARBON	1.0M 5% 1/4W
*****				R154	1-246-545-00	CARBON	1.0M 5% 1/4W
* 1-565-492-11 CONNECTOR, BOARD TO BOARD 16P				R155	1-246-545-00	CARBON	1.0M 5% 1/4W
* 4-835-639-00 PLATE, GROUND				R156	1-246-545-00	CARBON	1.0M 5% 1/4W
< CAPACITOR >				R157	1-247-713-11	CARBON	1K 5% 1/4W
C101	1-162-285-31	CERAMIC 180PF (F770ES:Germany/F870ES)	10% 50V	R158	1-247-713-11	CARBON	1K 5% 1/4W
C103	1-104-274-11	POLYSTYRENE 47PF (F770ES:Germany/F870ES)	10% 50V	R159	1-247-713-11	CARBON	1K 5% 1/4W
C151	1-162-285-31	CERAMIC 180PF (F770ES:Germany/F870ES)	10% 50V				

## INPUT

## LED (P.L)

## PREOUT

## CONTROL

Ref.No.	Part No.	Description	Remark
R160	1-247-739-11	CARBON 100 5% 1/2W (F333ESL/F770ES:AEP, UK)	
R160	1-249-673-11	CARBON 1K 5% 1/2W (F770ES:Germany/F870ES)	
R161	1-246-545-00	CARBON 1.0M 5% 1/4W	
R162	1-259-436-11	CARBON 2.2K 5% 1/6W (F770ES:Germany/F870ES)	
R163	1-259-436-11	CARBON 2.2K 5% 1/6W (F770ES:Germany/F870ES)	
R170	1-246-545-00	CARBON 1.0M 5% 1/4W	
		< SWITCH >	
S102	1-570-593-11	SWITCH, SLIDE(REMOTE TYPE)(DIRECT INPUT)	
S103	1-570-076-11	SWITCH, SLIDE(REMOTE TYPE) (REC OUT SELECT)	
*****			
	* 1-637-092-11	LED (P.L) BOARD *****	
		< DIODE >	
D607	8-719-313-40	DIODE SEL1516W	
*****			
	* 1-639-110-11	PREOUT BOARD *****	
		< CONNECTOR >	
CNJ901	1-564-980-11	PIN, CONNECTOR 4P (CONTROL S)	
		< DIODE >	
D950	8-719-912-20	DIODE 1SS120	
		< CONNECTOR >	
EH43	* 1-564-507-11	PLUG, CONNECTOR 4P	
EH44	* 1-564-506-11	PLUG, CONNECTOR 3P	
		< JACK >	
J902	1-565-319-71	JACK, PIN 2P (PREOUT)	
		< TRANSISTOR >	
Q950	8-729-900-80	TRANSISTOR DTC114ES	
		< RESISTOR >	
R953	1-249-393-11	CARBON 10 5% 1/4W	
R958	1-249-429-11	CARBON 10K 5% 1/4W	
*****			

Ref.No.	Part No.	Description	Remark
	* A-4345-485-A	CONTROL BOARD, COMPLETE *****	
		< CAPACITOR >	
C605	1-126-062-11	ELECT 47uF 20% 63V	
C608	1-126-058-11	ELECT 4.7uF 20% 63V	
C610	1-126-058-11	ELECT 4.7uF 20% 63V	
C901	1-136-165-00	FILM 0.1uF 5% 50V	
C902	1-124-556-11	ELECT 2200uF 20% 16V	
C903	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C904	1-126-233-11	ELECT 22uF 20% 50V	
C905	1-124-907-11	ELECT 10uF 20% 50V	
C906	1-126-233-11	ELECT 22uF 20% 50V	
C907	1-136-161-00	FILM 0.047uF 5% 50V	
C908	1-126-233-11	ELECT 22uF 20% 50V	
C909	1-102-963-00	CERAMIC 33PF 5% 50V	
C910	1-102-963-00	CERAMIC 33PF 5% 50V	
C912	1-101-004-00	CERAMIC 0.01uF 50V	
C920	1-136-165-00	FILM 0.1uF 5% 50V	
C921	1-124-907-11	ELECT 10uF 20% 50V	
C922	1-124-907-11	ELECT 10uF 20% 50V	
C923	1-124-907-11	ELECT 10uF 20% 50V	
C935	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C936	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C937	1-124-604-00	ELECT 330uF 20% 10V	
C939	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C940	1-124-477-11	ELECT 47uF 20% 25V	
C941	1-124-477-11	ELECT 47uF 20% 25V	
C942	1-124-477-11	ELECT 47uF 20% 25V	
C943	1-124-477-11	ELECT 47uF 20% 25V	
C944	1-124-477-11	ELECT 47uF 20% 25V	
C945	1-124-477-11	ELECT 47uF 20% 25V	
C946	1-124-477-11	ELECT 47uF 20% 25V	
C947	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C948	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C949	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C950	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C951	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C952	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C953	1-161-379-00	CERAMIC 0.01uF 20% 25V	
		< DIODE >	
D604	8-719-912-20	DIODE 1SS120	
D605	8-719-912-20	DIODE 1SS120	
D606	8-719-912-20	DIODE 1SS120	
D901	8-719-200-82	DIODE 11ES2	
D902	8-719-200-82	DIODE 11ES2	
D903	8-719-200-82	DIODE 11ES2	
D904	8-719-200-82	DIODE 11ES2	
D905	8-719-912-20	DIODE 1SS120	
D913	8-719-912-20	DIODE 1SS120	



## CONTROL

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
D914	8-719-912-20	DIODE 1SS120		R609	1-249-437-11	CARBON 47K 5% 1/4W	
D915	8-719-912-20	DIODE 1SS120		R610	1-249-433-11	CARBON 22K 5% 1/4W	
D916	8-719-912-20	DIODE 1SS120		R611	1-247-812-11	CARBON 160 5% 1/4W	
D917	8-719-912-20	DIODE 1SS120		R616	1-249-398-11	CARBON 27 5% 1/4W	
D918	8-719-912-20	DIODE 1SS120		R633	1-249-425-11	CARBON 4. 7K 5% 1/4W	
D919	8-719-912-20	DIODE 1SS120		R650	1-247-838-00	CARBON 2K 5% 1/4W	
D920	8-719-912-20	DIODE 1SS120		R908	1-249-429-11	CARBON 10K 5% 1/4W	
D921	8-719-912-20	DIODE 1SS120		R909	1-249-429-11	CARBON 10K 5% 1/4W	
D922	8-719-912-20	DIODE 1SS120		R910	1-247-887-00	CARBON 220K 5% 1/4W	
D923	8-719-912-20	DIODE 1SS120		R911	1-249-441-11	CARBON 100K 5% 1/4W	
D924	8-719-912-20	DIODE 1SS120		R912	1-249-441-11	CARBON 100K 5% 1/4W	
< CONNECTOR >				R913	1-247-895-00	CARBON 470K 5% 1/4W	
EH1	* 1-564-506-11	PLUG, CONNECTOR 3P		R914	1-249-405-11	CARBON 100 5% 1/4W	
EH2	* 1-564-506-11	PLUG, CONNECTOR 3P		R915	1-249-430-11	CARBON 12K 5% 1/4W	
EH3	* 1-564-506-11	PLUG, CONNECTOR 3P		R916	1-249-405-11	CARBON 100 5% 1/4W	
EH4	* 1-564-507-11	PLUG, CONNECTOR 4P		R917	1-247-903-00	CARBON 1M 5% 1/4W	
EH5	* 1-564-505-11	PLUG, CONNECTOR 2P		R918	1-249-429-11	CARBON 10K 5% 1/4W	
EH6	* 1-564-506-11	PLUG, CONNECTOR 3P		R919	1-249-429-11	CARBON 10K 5% 1/4W	
EH7	* 1-564-506-11	PLUG, CONNECTOR 3P		R920	1-249-425-11	CARBON 4. 7K 5% 1/4W	
EH8	* 1-564-512-11	PLUG, CONNECTOR 9P		R921	1-249-429-11	CARBON 10K 5% 1/4W	
EH9	* 1-564-512-11	PLUG, CONNECTOR 9P		R922	1-249-425-11	CARBON 4. 7K 5% 1/4W	
EH10	* 1-564-505-11	PLUG, CONNECTOR 2P		R923	1-249-425-11	CARBON 4. 7K 5% 1/4W	
EH11	* 1-564-511-11	PLUG, CONNECTOR 8P		R924	1-249-425-11	CARBON 4. 7K 5% 1/4W	
EH46	* 1-564-506-11	PLUG, CONNECTOR 3P		R925	1-249-425-11	CARBON 4. 7K 5% 1/4W	
< IC >				R926	1-249-413-11	CARBON 470 5% 1/4W	
IC901	8-759-635-31	IC M50253P		R927	1-249-429-11	CARBON 10K 5% 1/4W	
IC902	8-759-239-47	IC TC74HC123AP		R928	1-249-429-11	CARBON 10K 5% 1/4W	
IC903	8-759-635-88	IC M50720-255SP		R929	1-249-429-11	CARBON 10K 5% 1/4W	
IC904	8-719-902-56	IC PC817		R930	1-249-429-11	CARBON 10K 5% 1/4W	
IC905	8-759-604-84	IC M5F7806L		R931	1-249-429-11	CARBON 10K 5% 1/4W	
IC906	8-759-604-84	IC M5F7806L		R933	1-249-520-11	CARBON 47 5% 1/4W	
IC907	8-759-962-08	IC BA6208		R934	1-249-504-11	CARBON 10 5% 1/4W	
IC908	8-759-962-08	IC BA6208		R936	1-249-504-11	CARBON 10 5% 1/4W	
< TRANSISTOR >				R938	1-249-429-11	CARBON 10K 5% 1/4W	
Q601	8-729-201-53	TRANSISTOR 2SA1015-GR		R940	1-249-399-11	CARBON 33 5% 1/4W	
Q602	8-729-201-53	TRANSISTOR 2SA1015-GR		R941	1-249-441-11	CARBON 100K 5% 1/4W	
Q603	8-729-140-96	TRANSISTOR 2SD774-34		R942	1-249-405-11	CARBON 100 5% 1/4W	
Q604	8-729-281-54	TRANSISTOR 2SC1815-BL		R943	1-249-429-11	CARBON 10K 5% 1/4W	
Q901	8-729-900-36	TRANSISTOR DTC124ES		R944	1-249-425-11	CARBON 4. 7K 5% 1/4W	
Q902	8-729-119-78	TRANSISTOR 2SC2785-HFE		< RELAY >			
Q903	8-729-620-05	TRANSISTOR 2SC2603-EF		RY601	1-515-614-11	RELAY	
Q904	8-729-900-61	TRANSISTOR DTA114ES		< VIBRATOR >			
Q912	8-729-119-77	TRANSISTOR 2SA1175-FEK		X901	1-577-260-21	VIBRATOR, CERAMIC	
Q913	8-729-900-61	TRANSISTOR DTA114ES		*****			
< RESISTOR >							
R606	1-249-429-11	CARBON 10K 5% 1/4W					
R608	1-249-437-11	CARBON 47K 5% 1/4W					

SW (F)

EYE

OUTLET

V.S

Ref. No.	Part No.	Description	Remark
	* 1-637-094-12	SW (F) BOARD ***** < DIODE >	
D506	8-719-301-49	DIODE SEL2810A	
D507	8-719-301-49	DIODE SEL2810A	
D925	8-719-301-49	DIODE SEL2810A (F770ES(GOLD)/F870ES(GOLD))	
D925	8-719-303-02	DIODE SEL2510C-D (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
D926	8-719-301-49	DIODE SEL2810A (F770ES(GOLD)/F870ES(GOLD))	
D926	8-719-303-02	DIODE SEL2510C-D (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
D927	8-719-301-49	DIODE SEL2810A (F770ES(GOLD)/F870ES(GOLD))	
D927	8-719-303-02	DIODE SEL2510C-D (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
D928	8-719-301-49	DIODE SEL2810A (F770ES(GOLD)/F870ES(GOLD))	
D928	8-719-303-02	DIODE SEL2510C-D (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
D929	8-719-301-49	DIODE SEL2810A (F770ES(GOLD)/F870ES(GOLD))	
D929	8-719-303-02	DIODE SEL2510C-D (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
D930	8-719-301-49	DIODE SEL2810A (F770ES(GOLD)/F870ES(GOLD))	
D930	8-719-303-02	DIODE SEL2510C-D (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
D931	8-719-301-49	DIODE SEL2810A (F770ES(GOLD)/F870ES(GOLD))	
D931	8-719-303-02	DIODE SEL2510C-D (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
		< RESISTOR >	
R613	1-249-799-11	CARBON 750 5% 1/2W	
R628	1-247-703-11	CARBON 180 5% 1/4W	
R629	1-247-703-11	CARBON 180 5% 1/4W	
R901	1-247-887-00	CARBON 220K 5% 1/4W	
R902	1-247-887-00	CARBON 220K 5% 1/4W	
R903	1-247-887-00	CARBON 220K 5% 1/4W	
R904	1-247-887-00	CARBON 220K 5% 1/4W	
R905	1-247-887-00	CARBON 220K 5% 1/4W	
R906	1-247-887-00	CARBON 220K 5% 1/4W	
R907	1-247-887-00	CARBON 220K 5% 1/4W	
		< SWITCH >	
S901	1-572-198-11	SWITCH, KEY BOARD (PHONO)	
S902	1-572-198-11	SWITCH, KEY BOARD (TUNER)	
S903	1-572-198-11	SWITCH, KEY BOARD (CD)	
S904	1-572-198-11	SWITCH, KEY BOARD (AUX)	
S905	1-572-198-11	SWITCH, KEY BOARD (TAPE 3)	

Ref. No.	Part No.	Description	Remark
S906	1-572-198-11	SWITCH, KEY BOARD (TAPE 2)	
S907	1-572-198-11	SWITCH, KEY BOARD (DAT/TAPE 1)	
		*****	
	* 1-637-095-11	EYE BOARD ***** < CAPACITOR >	
C914	1-126-022-11	ELECT 47uF 20% 10V < IC >	
IC909	8-749-920-59	IC A1QH3020S < RESISTOR >	
R932	1-249-421-11	CARBON 2.2K 5% 1/4W *****	
	* 1-640-345-11	OUTLET BOARD (F770ES/F870ES) *****	
	1-533-183-11	HOLDER, FUSE	
	* 4-923-814-01	PLATE, CONNECTION (F770ES/F870ES) < CAPACITOR >	
C801	△1-161-741-00	CERAMIC 0.001uF 10% 400V (F770ES/F870ES) < CONNECTOR >	
SE100	1-564-321-00	PIN, CONNECTOR 2P (F770ES/F870ES)	
VH100	* 1-564-321-00	PIN, CONNECTOR 2P (F770ES/F870ES)	
VH101	* 1-564-321-21	PIN, CONNECTOR 2P (F770ES/F870ES) *****	
	* 1-637-837-12	V. S BOARD (E) (F333ESL) *****	
	1-533-183-11	HOLDER, FUSE (F333ESL) < CAPACITOR >	
C901	1-161-741-00	CERAMIC 0.001uF 10% 400V (E) (F333ESL) < SELECTOR >	
S802	△1-572-009-11	SELECTOR, VOLTAGE (E) (F333ESL) < CONNECTOR >	
SE2	1-564-687-11	PIN, CONNECTOR 3P (E) (F333ESL)	
SE3	1-564-687-11	PIN, CONNECTOR 3P (E) (F333ESL)	
SE51	1-564-321-00	PIN, CONNECTOR 2P (E) (F333ESL)	
VH50	* 1-564-321-00	PIN, CONNECTOR 2P (E) (F333ESL)	

**Note:** The components identified by mark △ or dotted line with mark △ are critical for safety.  
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
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#### ACCESSORIES & PACKING MATERIALS

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1-465-801-11	REMOTE COMMANDER (RM-S703)	(F333ESL/F770ES(BLACK)/F870ES(BLACK))	
1-465-801-21	REMOTE COMMANDER (RM-S703)		
3-753-600-11	MANUAL, INSTRUCTION		
3-753-600-41	MANUAL, INSTRUCTION		
3-753-601-11	MANUAL, INSTRUCTION (GERMAN)	(Germany:F870ES)	
4-847-802-00	SCREW (AEP, E, Germany)		
* 4-931-954-01	CUSHION		
* 4-945-279-01	INDIVIDUAL CARTON (F770ES)		
* 4-945-280-01	INDIVIDUAL CARTON (F333ESL)		
* 4-945-282-01	INDIVIDUAL CARTON (F870ES)		

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#### HARDWARE LIST

#1	7-682-148-15	SCREW, TR	
#2	7-682-546-09	SCREW, +B 3X5, PAWL	
#3	7-682-547-09	SCREW +BVTT 3X6 (S)	
#4	7-682-548-09	SCREW +B 3X8	
#5	7-682-549-04	SCREW +B 3X10	
#6	7-682-668-09	SCREW +PSW 4X30	
#7	7-683-255-58	SET SCREW 5X6 HEXAGON SOCKET	
#8	7-684-024-04	N 4, TYPE 2	
#9	7-685-153-19	SCREW +P 3X30 TYPE2 SLIT	
#10	7-685-234-19	SCREW +KTP 2.6X8 TYPE2NON-SLIT	
#11	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#12	7-685-647-79	SCREW +BVTP 3X10 TYPE2 SLIT	
#13	7-685-650-79	SCREW +BVTP 3X16 TYPE2 SLIT	
#14	7-688-004-02	W 4, SMALL	

